Privacy and Technology: Folk Definitions and Perspectives

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Executive Summary

A review of the literature from many different perspectives shows a lack of an agreed upon definition of privacy (Newell, 1995). In addition, there has been little systematic and analytical research that links privacy and technology (Palen & Dourish, 2003). We conducted a focus group study to investigate folk beliefs about privacy and to determine whether common issues arise in privacy perspectives across contexts as well as across individuals. The present report first presents an overview of literature examining privacy, from the vantage point of HCI and from other perspectives. The report will then address details of our experimental procedure used to explore this area, followed by our current findings and conclusions and future work in progress and proposed.

Introduction

Given the increase in requests for disclosures online, designing for privacy is important - some say critical - in helping users feel comfortable, safe, and private while interacting with technologies. Designers must understand the characteristics of technologies that influence privacy, as well as be able to predict the impact of their design decisions on the users' privacy (Boyle & Greenberg, p. 2). But how is this done? How does one design something to be *private*?

To begin to determine how to design technologies that users perceive as privacy protective, we must understand what privacy is, and what users' conceptual model of privacy is. Looking back at previous research, it seems that privacy has been studied from many perspectives: psychology, public policy, sociology, and technology to name a few. However, despite all of this research, privacy views are "varied, occasionally conflicting, and generally difficult to evaluate in a coherent fashion. There is not, in fact, agreement on what privacy actually is" (Newell, p. 87).

This debate over privacy is not new. The foundations come from two men: Alan Westin (1967) and Irwin Altman (1975). Westin defines privacy as the process of controlling the disclosure of information about an individual, group, or institution, to others. He describes four states of privacy: **solitude, intimacy, anonymity, and reserve**. Westin also suggests that there are four functions, or purposes, of privacy: **personal autonomy, emotional release, self-evaluation, and limited and protected communication**. Westin's theory posits that the states of privacy are the means by which the privacy functions are achieved. For example, according to Westin, one may seek out solitude as a means to achieve self-evaluation.

Irwin Altman adds to Westin's theory by describing privacy as "selective control over access to the self" (1975, p. 24). Altman suggests that privacy is a process of boundary control, where an individual is capable of having too little (e.g. crowding) or too much privacy (e.g. social isolation). Most of all, Altman urges one to consider that privacy is inherently social, and that a good understanding of privacy must include people, and how they interact with each other and with their social and physical environment.

While the work of these researchers has been very influential, there are some caveats to consider. Both men based their findings on anthropological research, which is often not based on systematic empirical evidence. Westin also qualified his own research by applying it to Western democracies only (Margulis, 2003), and Altman's definition is so imbedded in physical space that it may not apply correctly to information technology space (Palen & Dourish, 2003).

Due in part to the popularity and controversy of privacy settings on popular social networking sites such as Facebook and LinkedIn, the question of privacy has begun to receive much scholarly attention in the field of human-computer interaction. However, two major barriers cited by many privacy researchers are the lack of a good definition of privacy (Harris Interactive, 2003; Westin, 1967; 1981) and the difficulties that arise because, "privacy means different things to different people." (Jensen, Potts, & Jensen, 2005).

In addition to the confusing theoretical history of privacy, recent privacy studies have also not addressed privacy as a construct, preferring instead to focus on narrower topics such as online self-disclosure in a particular domain (such as ecommerce, Ackerman, Cranor, & Reagle, 1999; social networking sites; or information sharing preferences, Ludford, Priedhorsky, Reily, & Terveen, 2007). While these studies do address privacy in their own domain, what they leave out is a broader understanding of how perceptions of privacy in one context may affect another.

In addition, few attempts have been made to study gender, age, and cross-cultural differences in privacy perceptions and beliefs.

To add to the confusion about privacy, it has even been difficult to come to an agreement between individuals' views and behaviors of privacy. Organizations are concerned about the leaking proprietary data, and citizens are concerned about the amount of data that companies and governments have about them (Karat, Karat & Brodie, 2008). However, despite their concern, a majority of individuals are privacy pragmatists, or those who have strong feelings about privacy but yet are still willing to disclose their information in some cases (Harris Interactive, 2003).

Therefore, systematic research is needed not only to rectify the varying definitions of privacy, but also to apply privacy to technology and to observe any differences that occur when technology is present. As Palen & Dourish observe, "…despite broad concern, there have been few analytic or systematic attempts to help us better understand the relationship between privacy and technology. We recognize when our systems introduce 'privacy issues', but we have few tools for understanding exactly what those issues are" (2003, p. 129).

The goal of the present study is to fill in the gap in understanding where privacy and technology meet. We aim to begin a dialogue about the motivations and justifications for privacy behaviors (disclosure, sharing, etc.) by collecting folk privacy definitions. We also wish to start to tease out privacy concerns and beliefs across several contexts, and begin to make conclusions about differences in privacy perceptions across genders, generations, and cultures.

Method

Participants

Sixty-two adults participated in the current study, with one older adult dropping out in the middle.. Half (N=34) were older adults between the ages of 65 and 75 (M = 69.46, SD = 4.95), and half (N=28) were younger adults between the ages of 18 and 28 (M = 20.89, SD = 4.95). The older adult population was chosen based on their availability and relevance to the broader "aging in place" initiative at Georgia Tech. Since a ten year age range for the older adults, a ten-year age range was also chosen for younger adults, allowing for comparisons across age.

Younger adult participants were drawn from the student participant pool in the School of Psychology at Georgia Tech. An advertisement was placed online using Georgia Tech's Experimetrix site, and students who needed psychology experiment credit signed up. The requirements of the study were such that only younger adult females or males were allowed to sign up for a particular study. The students themselves chose this study from a list of all psychology studies that were offered at that time. Due to the 3-hour length of the study compared to the shorter length of some of the other offerings on the psychology experiment list, students who signed up for the study were highly motivated in one way or another to complete 3 credit hours at one time.

Half of the older adults (N=18) were recruited using the participant database in the Human Factors and Aging Lab. These participants were called by an undergraduate in the Human Factors and Aging Lab based on their age and gender. Once screened, the potential participant's schedule was noted. After eight or ten participants were screened, a time that worked for the majority of potential participants was chosen, sometimes leaving one or two participants out of the study based on the participant's schedule. The other half of the older adults (N= 16) was recruited at a local senior center in the Atlanta area (Maggie Russell Tower).

We worked with the member director to set up two focus groups, and the director worked to get the members to the session.

To promote disclosure, encourage discussion, and enable analysis of differences across sessions (Kruger & Casey, 2000), groups were kept homogenous with respect to gender and age. In total, 11 focus group sessions were conducted. The first session was conducted with members of the Human Factors and Aging Lab as an early pilot. The second session was also a pilot as we were only able to recruit two male participants. The seventh session (FG5-FOA) was also used as a pilot due to the fact that not all of the scenarios were covered in the three hours allotted for the study and participants were clearly fatigued. The eleventh session (FG9-FOA) was conducted to replace the seventh.

Table 1. Reported Participant Demographic Information [a] *(total N = 62).*

		Younger Adults N=28		Older Adults N=34	
Variable	Categories	*N*	%	*N*	%
Education	Less than high school	0	0	2	5.9
	High school graduate	4	14.3	10	29.4
	Vocational training	0	0	2	5.9
	Some college	18	64.3	9	26.5
	Bachelor's degree	3	10.7	8	23.5
	Master's degree	3	10.7	3	8.8
Occupational status	Working full-time	0	0	2	5.9
	Working part-time	1	3.6	0	0
	Student	26	92.9	0	0
	Homemaker	0	0	1	2.9
	Retired	0	0	30	88.2
	Other	1	3.6	1	2.9

[a] Some cells are missing data because participants did not answer some questions.

Materials

Informed Consent. Two versions of the informed consent form were developed to accommodate both age groups. Students between 18 and 28 years of age were given the choice of whether to participate in the study for credit or for pay, and the older adults were paid for their time. Therefore, one consent form shows the compensation as 1 credit per hour of participation, and the second form shows a compensation of $10 per hour of participation. For the complete informed consent forms see Appendix B.

Privacy Attitudes Questionnaire. The privacy attitudes questionnaire was developed specifically for this study as a way to measure participants' base privacy attitudes. For example, someone who is more concerned about privacy in general may be less open and forthright than someone who is less concerned about privacy in general. Due to the fact that the privacy attitudes questionnaire is specific and may bias the focus group discussion, it was the first questionnaire that participants would fill out. For the younger adults, the PAQ was emailed to participants when they signed up for the study, and was due back to the moderator at least 24-hours before the study start. The older adults received the PAQ in their packets, and were expected to fill out the form and bring it with them to the study. For the older adults we tested at Maggie Russell Tower, the PAQ was administered directly after administering the informed consent.

Looking for a baseline measure, The Harris Poll (2003) uses a set of 3 questions to categorize people into three privacy attitudes: 1) Privacy Fundamentalist, 2) Privacy Pragmatist, and 3) Privacy Unconcerned. In addition, Jensen et al. used a separate set of 5 privacy questions that are more related to technology to categorize participants. Combining both sets of questions

into a questionnaire using a Likert scale, we developed what we call the Privacy Attitudes Questionnaire, which can be seen in detail in Appendix B.

Contact and Demographics form. The demographics form was designed to gather general information about the participant's age, educational level, current health status, and current activity level. For the complete contact form and demographic and health questionnaire see Appendix B.

Technology Experience Questionnaire. The technology experience questionnaire was used to measure the amount of technology experience a participant had prior to the study. A measure of technology experience is especially important when it comes to comparing older adults to younger adults, and our hypothesis is that technology experience may prove to be the differentiator instead of actual age. The complete questionnaire can also be found in Appendix B.

Focus Group Script. The introduction of the focus group script goes over procedure and logistics, such as confidentiality, how a focus group works, and what participants can expect. The rest of the script is split into three sections. The first section of the focus group script allows for individual definitions of privacy to be collected. Participants were asked to write down their individual definition of privacy, or "what privacy means to you." They were instructed to write down whatever comes to their mind, but to work individually. After finished, they were to fold the piece of paper and put it away in an envelope.

The second and most lengthy portion of the script discussed six scenarios chosen based on their high potential for privacy intrusiveness as well as their prominence in the privacy literature. All of the scenarios are shown below in Table 2. Each of the 6 scenarios was followed up by a number of probes chosen based on contextual factors that could be potentially

privacy intrusive. An example of the probes used is shown in Table 3. Each scenario was discussed for about 20 minutes in total.

Table 2. Privacy Scenarios

Category	**Scenario**
1. Photo Sharing	You have a lifetime of photos you are thinking of storing on a website.
2. Identity Theft	You are using your credit card to buy dinner in your favorite restaurant. When the waiter picks up the bill with your card in it, he takes the card in the other room for 5 minutes.
3. Health Disclosure	You have the symptoms of a an illness that have lasted for over a week. You call your doctor's office and describe your symptoms to a nurse.
4. Location Tracking	You are using a cell phone with a locating device (such as GPS). You find out that there is a way for anyone in the world to find out your exact location.
5. Surveillances	Atlanta is trying to crack down on traffic violations by installing traffic cameras on every stop light. These cameras monitor traffic and then take a snapshot of anything out of the ordinary, such as someone running a red light. (Red-light camera)
6. Self Disclosure & Relationship Building	You are having a conversation with friends at home.

Table 3. Example Privacy Scenario with Probe

Scenario
You have a lifetime of photos you are thinking of storing on a website. a. Standard Probes i. Do you have any privacy issues or concerns with this situation? ii. What about this situation makes it concerning? iii. Why? b. Additions to this scenario i. What if you used a scrapbook? ii. What about an online photo album (like Flickr, Picasa, Snapfish, etc - Only say these if participants ask for examples.)? iii. What about if they were just photos from a recent trip? iv. What if there were sensitive photos included in your set? v. What if you could pick exactly who saw the photos?

The flow of this portion of the focus group was as follows. The moderator presented the scenario to the participants by reading it. When finished, the standard probe of "*Do you have any privacy issues or concerns with this situation?*" was used. Participants spoke about the main scenario first, and then the probes were used in order. It was at the moderator's discretion to introduce the probes to the scenario at the appropriate time. Other probes were used throughout the discussion of the scenarios to follow-up on individual participants' responses, such as "Why?", "Can you explain?", and "What do you mean?", as well as other similar probes. Examples of specific technology, slang, or any specific things that may not apply to both a younger and older adult population were kept out of the focus group as much as possible unless introduced by a participant or absolutely necessary.

The third portion of the focus group repeated the first section, as participants were asked to write down their individual definitions of privacy. After the definitions were again folded and put into an envelope, a short debrief was given. The debrief included asking participants if they had any questions or concerns about the study, administering the Moderator Effects Questionnaire (MEQ) thanking them for their time, and paying them if necessary. Please see Appendix A for the full script.

Moderator Effects Questionnaire. Because the focus groups were split into homogeneous groups based on age and gender, a moderator that shared the group's age and gender would have been best. However, due to time and resource constraints this was not possible and a female aged 25 moderated the focus groups. To see if the moderator's age and/or gender had any effect on what participants were willing to disclose, the Moderator Effect Questionnaire (MEQ) was administered to participants at the end of the focus group script.

Please see Appendix A for a full checklist of the questionnaires and exercises given to participants.

Equipment and Software

Audio recording equipment. All interviews were recorded using a digital recorder. I used either an Olympus DM-20 or the updated version, the Olympus DS-30.

MAXqda qualitative software. MAXqda is a software package that assists in qualitative data analysis by helping to systematically evaluate and interpret text. The program assists in unifying coding segments and transcripts and allows coding along multiple dimensions. Each part of the structured interview has its own coding dimension.

SPSS and Excel. Both SPSS and Excel were used as tools to enter questionnaire data and to perform statistical analyses where needed. SPSS templates of the Technology Experience Questionnaire (TEQ) and the Demographics and Health Questionnaire had been created by other lab members prior to the privacy study and were used to enter data. An Excel spreadsheet was created both for the Privacy Attitudes Questionnaire (PAQ) and the Moderator Effects Questionnaire (MEQ).

Procedure

Once participants were recruited, they were each sent several questionnaires. The younger adults were emailed the Privacy Attitudes Questionnaire only. The older adults who traveled to the psychology building to participate were sent packets with all of the questionnaires and directions at least 3 days in advance. The older adults who participated at the local senior center were given the packets at the beginning of the interview. These participants were instructed to read and complete the informed consent and the privacy attitudes questionnaires first. These forms were collected, and the focus group was begun.

At the beginning of the focus group discussion, participants were asked to write down their individual definitions of privacy. This was followed by a short discussion of these definitions in which the moderator logged ideas on an easel sheet. Participants were encouraged to tell personal stories and asked how those relate to privacy.

The longest amount of time in the focus group was spent discussing the six scenarios shown in Table 2. Each scenario took about twenty minutes to complete in total. There was one 10 minute break in the focus group half-way into the three hours. Usually the group had talked about two or three of the scenarios before the break. Participants were given snacks and water, and were recommended to get up and use the bathroom facilities at this time. When all six scenarios were completed, the privacy definition exercise was repeated and the participants were given the moderator effects questionnaire. At the end of the session, participants were thanked, paid with either School of Psychology checks or credit, and given time to finish questionnaires. Participants were then escorted out of the building.

Results

The Privacy Attitudes Questionnaire, Technology Experience Questionnaire (TEQ), Demographics and Health Questionnaire, and Moderator Effects Questionnaire (MEQ) were all entered into either SPSS or Excel. Since previous studies in the lab used the Technology Experience Questionnaire and the Demographics and Health Questionnaire, the current study used the entry criteria from those past studies. Please see Appendix B for these questionnaires, and note the number grading scheme next to the choices on the questionnaires.

Privacy Attitudes Questionnaire (PAQ)

The Privacy Attitudes Questionnaire was modeled after work done in two previous privacy studies (Harris Interactive, 2003; Jensen, Potts, & Jensen, 2005), and therefore offered two ways to categorize the participants into 1) Privacy Fundamentalist, 2) Privacy Pragmatist, or 3) Privacy Unconcerned (as defined in Harris Interactive, 2003). Categorizations according to Harris Interactive were completed based on the first three questions of this questionnaire, and categorizations according to Jensen et al. were completed based on the final five questions. When these categorizations were compared, there were many instances of disagreement between the two methods. A further investigation was launched into the correct categorization method.

Looking back at how Westin categorized participants (Harris Interactive, 2003), he defined a privacy fundamentalist as someone who answers all three questions in a privacy-oriented way. Someone who answers none of the questions in a privacy-oriented way is categorized as privacy unconcerned, and in-between is a privacy pragmatist. We wanted to provide participants with the option of answering neutrally (despite the fact that this study forced an answer), and so we could not apply the Harris Interactive categorization in the same way as their study.

Jensen et al. defined a privacy fundamentalist as someone who answered four out of the five privacy questions in a privacy-oriented way and also had no negative answers. Someone who is privacy unconcerned would have answered in the opposite way, no privacy-oriented answers and at most one neutral. Similar to Westin's categories, a pragmatist is someone in the middle. See Table 4 below for the full explanation of these classifications.

Table 4. Privacy Attitudes Categorizations

Privacy Category	**Harris Interactive (2003)**	**Jensen et al. (2005)**	***Modified* Harris Interactive**
Privacy Fundamentalist	All privacy-oriented answers	4/5 privacy oriented answers & at most 1 neutral answer	All privacy-oriented answers but allow one neutral answer
Privacy Unconcerned	No privacy-oriented answers	No privacy-oriented answers & at most 1 neutral answer	No privacy-oriented answers but allow one neutral answer
Privacy Pragmatist	remaining participants	remaining participants	remaining participants

Due to the conflicting nature of these two categorization techniques, a modified categorization to both research studies was applied to try and triangulate into the technique worth choosing. Therefore, Westin's categorization was modified to allow for one neutral in either the fundamentalist or unconcerned profile, which categorized more participants into these two more extreme categories.

After looking at the percentage outcomes of these scenarios, as well as tweaking the thresholds for the Jensen et al. categorization, the data seemed to be centering in on the original Westin definition. While this was an extreme categorization (i.e. a participant had to exhibit three of three privacy-oriented or non-privacy-oriented answers), it seemed to categorize the appropriate number of participants into each group. It also did not favor one category over another, as the classifications based on Jensen et al. did. The percentage of privacy pragmatists

in the current study (77%) was slightly higher than the 66% suggested by Harris Interactive (2003). While this was due mainly to the allowance of participants to answer neutrally, recent research has also suggested that the percentage of Privacy Pragmatists is greater than previously thought (Patil & Lai, 2005).

Table 5. Privacy Attitude Results (N = 62)

Privacy Category	Harris Interactive (2003)	Jensen et al. (2005)	*Modified* Harris Interactive
Privacy Fundamentalist	n = 7 11%	n = 19 31%	n = 16 26%
Privacy Unconcerned	n = 48 77%	n = 28 45%	n = 45 73%
Privacy Pragmatist	n = 7 11%	n = 15 24%	n = 1 2%
TOTAL	**62** **100%**	**62** **100%**	**62** **100%**

Moderator Effects Questionnaire (MEQ)

The Moderator Effects Questionnaire was used to test whether the moderator, a 25-year old female, had any influence on what participants were willing to disclose. The results of the questionnaire, shown below, show that the great majority of participants report that they were not influenced by the moderators age or gender. In addition, those who said they were affected went on to describe positive aspects of the moderator, such as "being skillful" and a "wonderful listener." While the MEQ was a self-reported measure of disclosure, placing this questionnaire at the end of the focus group after the moderator had established rapport with the participants should allow the participants to be as honest and open as possible.

Table 6. Moderator Effects Questionnaire (N = 35)

Privacy Category	Gender	Language	*Other*
Yes			
N	5	4	6
%	14%	11%	17%
No			
N	30	31	29
%	86%	89%	83%

Privacy Definitions

Privacy definitions for each individual participant were entered into an Excel spreadsheet. A single coder read through all of the definitions and broke each definition up into segments. Segments were defined as separate, individual ideas represented as a single word or a phrase. Each segment was coded into only one bottom-level code. After the bottom-level codes were finalized, categories were developed to combine several codes into a broader, overarching idea. A second pass of coding was done next to apply some codes to the privacy definitions in a top-down manner. The top-down codes were drawn from areas that emerged in the bottom-up coding scheme that were not captured (measured) well using only exact segments from the definitions, as well as frequently discussed ideas in the recent privacy literature. (E.g. understanding who owns the information or ideas in the definition was not captured adequately by the bottom-up coding scheme, and was therefore applied to all definitions.)

Development of the privacy definition coding scheme

A coding scheme is a necessary component of a qualitative data analysis to allow for a systematic analysis of the raw data obtained from the interviews. A coding scheme is the development of qualitative categories based upon a bottom-up (based on participants' responses) and a top-down analysis (i.e., based on review of the literature). The coding scheme for the

privacy definitions was developed from a bottom-up analysis, choosing segments directly from the privacy definitions.

The procedure for developing a final coding scheme was very iterative. The first iteration involved reading all of the privacy definitions and extracting segments. These segments were tagged using MAXqda, but not categorized. The same coder then conducted a second pass to categorize each segment into a the most basic, bottom-level code. I n many instances, the code name was the same as the word or phrase that was extracted (e.g. "*The ability to keep information to yourself, or being able to give it out as one wishes, not as others wish*" would receive bottom-level codes such as ability, keep, information, decision, disclosure, and preference). Once every segment was labeled, codes were compared for similarity, and if similar enough were combined into one bottom-level code. This decision was made by the single coder, but was confirmed by the rest of the research team for reliability. For example, "*need to know*" and "*none of your business*" were combined into one bottom-level code because the idea behind both codes is very similar. However, "*decision*" and "*preference*" were kept separate because they implied different things. Please see Appendix D for bottom-level codes and code categories.

Next, once all codes were combined and a final coding scheme was developed, the coder conducted a final bottom-up coding session of the privacy definitions. Based on the entire, all-inclusive set of codes, the final pass provided a way to classify code segments into the correct categories.

Interrater Reliability

Interrater reliability is currently being conducted by a secondary coder that had not seen the coding scheme prior to evaluating codes. The secondary coder was given all of the codes and

code categories. Because segments were often double-coded and because both bottom-up and top-down codes were given, the secondary coder was asked to make a yes or no choice for each bottom-level code for each privacy definition. For example, the list of code categories, bottom-level codes and code definitions were given to the coder along the left side of an Excel spreadsheet, along with privacy definitions along the top. For each code, the coder decided whether the privacy definition included that code or not.

To validate our reliability checking strategy, the secondary coder first coded 8 of the 62 total privacy definitions. [I am currently evaluating this reliability checking strategy, and, if acceptable, will continue by allowing the rest of the privacy definitions to be coded in this way.]

Focus Group Scenarios

Each focus group was transcribed and transcripts were segmented into units based on the six scenarios used. [Currently no analysis has been conducted for the scenarios in this study, but this is the next planned step.]

Overview of privacy definitions analysis

On average, participants wrote 23 words for their privacy definitions. Each of those definitions was given an average of 6.3 bottom-level codes each. In total, there were 54 distinct bottom-level codes which were then grouped into 8 higher-level categories. These categories are shown below in Table 7.

Table 7. Code Categories

Code Category	**Bottom-level codes included**
Relationship with Others	Control (internal vs. external) Includes Others (all, certain, no) No right/need to know Trust Protect Boundary Consent From the public Control
Information / Disclosure	Owner of the information (you, them, shared) Sharing Access Ownership Information
Secret / Hidden	Secret Confidentiality Hidden
Choice	Decision Preference
Respect / Violation	Respect Violation
Freedom	No pressure/fear Disruption/not bothered Freedom Safety Peace of mind
Space	Anonymous Personal space Place Seclusion
Repercussions	Benefit someone else Safety

As a potential measure of complexity, privacy definition length did vary somewhat across groups. It is important to note that older adult male definitions tended to be shorter and were coded with fewer codes in general, and so may be somewhat under-represented in the group comparisons (see Table 8).

Table 8. Code Complexity

Subgroup	Average # of words	Average # of codes	Words per code
Young adult females (N = 13)	28	8.0	3.50
Young adult males (N = 13)	29	7.3	3.97
Older adult females (N = 20)	32	5.8	5.52
Older adult males (N = 15)	15	4.1	3.66
YOUNG ADULTS	**28**	**7.7**	**3.64**
OLDER ADULTS	**24**	**5.0**	**4.8**
MALES	**22**	**5.7**	**3.86**
FEMALES	**30**	**6.9**	**4.35**

Major Themes

Trends emerged across all focus groups and are shown in Table 9 below. All participants focused their definitions on some sort of relationship with others, "information", sharing or disclosure, keeping something, and having a choice. Drilling down into those who mentioned something about others, a majority of the mentions did involve some others. Most participants (52%) included certain others in their definitions, such as "those whom I trust" or "me and my family." In addition, 8% of participants included all others in their definition. These mentions include things such as "allowing others access into your personal information." 40% of participants did not include others in their privacy definitions, saying things such as "privacy means keeping my information to myself."

Table 9. Privacy Definition Trends

Code category	Percent of total N (unless otherwise indicated)
Relationship with others	**75% (n = 46)**
All others	8% (percent of local N)
Certain Others	52% (percent of local N)
No others	40% (percent of local N)
Information	**41% (n=25)**
Sharing	**30% (n=18)**
Keep	**36% (n=22)**
Choice	**26% (n=16)**

Group differences

Sharing. Some age and gender differences did emerge in the data. A greater percentage of younger adults and females mentioned sharing. In addition, when looking at only sharing mentions, the majority of mentions came from younger adults and females. Younger adults also tended to bring up information and disclosure more so than older adults (Table 10). When examining the relationship participants had with others, younger adults tended to include others in their definition of privacy (all others and certain others) more so than older adults, who tended to include no one else in their definitions (Table 11). Complementary to this finding is that younger adults and females showed a tendency to include others' information or shared information in their definitions (as seen in Table 12).

Table 10. Sharing and Information disclosure

Code category	**Younger Adults**	**Older Adults**	**Males**	**Females**
Sharing (Total N = 34)	42%	20%	18%	39%
% of sharing mentions in each subgroup	61%	39%	28%	72%
Information	69%	46%	57%	55%

Table 11. Relationship with others

Code category	Younger Adults	Older Adults	Males	Females
Others (N = 36)	65%	54%	46%	70%
All others	8%	3%	4%	6%
Certain others	38%	23%	25%	33%
No others	19%	29%	18%	30%

Table 12. Information ownership

Code category	Younger Adults	Older Adults	Males	Females
(n = of those who mentioned others)				
Ownership				
Not mine	**15%**	**8%**	**5%**	**17%**
Shared	0%	4%	0%	3%
Others'	15%	4%	5%	13%
Mine	85%	92%	95%	83%

Control. Most participants thought that they were the ones who needed to act or control something, saying, for example, "I need to protect my privacy." Younger adults and males tended to think they are in control more so than older adults and females (Table 13). Females were more likely than males to have an external or shared control. To get rid of the bias toward younger adult females due to fewer codes for older adult males, analysis was also done at a local level. Again, the trend was repeated – males tended to think they were in control more than females, who gave control to others or shared control (Table 14). In addition to control, younger adults tended to mention choice, ability, and consent more than older adults (Table 15).

Table 13. Control

Code category N=	Total 62	Younger Adults 26	Older Adults 35	Males 28	Females 33
Control	**80%**	**92%**	**71%**	**79%**	**82%**
Internal	54%	65%	46%	61%	48%
External	20%	19%	20%	11%	27%
Shared	7%	8%	6%	7%	6%

Table 14. Internal and External control

Code category N=	Younger Adults 26	Older Adults 35	Males 28	Females 33
(n = those with internal control)	71%	64%	77%	59%
(n = those with external control)	21%	28%	14%	33%

Table 15. Consent, choice, ability

Code category N=	Younger Adults 26	Older Adults 35	Males 28	Females 33
Consent	**5**	3	4	4
	19%	9%	14%	12%
Choice	**11**	5	7	9
	42%	14%	25%	27%
Ability	**6**	1	5	2
	23%	3%	18%	6%

Space and Information. Older adults mentioned space more than younger adults (Table116). In addition, older adults tended to describe privacy in terms of formal information, such as documents, health forms, and specific pieces of information disclosed (social security number, mother's maiden name, etc.). For example, one participant said, "No one else should be able to invade your home, take away anything of yours, and all of your records - home, policies, etc."

Table 16. Space

Code category	Younger Adults	Older Adults	Males	Females
N=	26	35	28	33
Space	3	9	6	6
	12%	26%	21%	18%

Privacy Attitudes

Based on Westin's classification used in Harris Interactive (2003), there were 47 privacy pragmatists and 7 of each unconcerned and fundamentalist. Looking at the privacy definition codes over the three classifications did not show any notable differences in the data. Perhaps the classifications used was not detailed enough to distinguish the privacy concerned from the privacy unconcerned. The results of the overall data seem to suggest that privacy definitions are very complex and idiosyncratic, which may suggest that broader classifications of privacy are not helpful.

Overview of data

The set of data collected to date is quite large. 8 focus groups is equivalent to 62 participants, 62 privacy definitions before and 62 after the study, 24 hours of audio and over 500 pages of transcription.

Discussion

A focus group study was conducted in order to understand folk definitions of privacy and what contextual factors play a role. So far, with the analysis of the individual folk definitions, over 56 ideas related to privacy have emerged from the data. Of these, the most discussed ideas are relationship with others, information and disclosure.

There were also some interesting group patterns that emerge from this data set. It seems as though younger adults and females tended to have a more open or broader definition of privacy. Younger adults include others in their definition more so than older adults, mentioning *sharing* and *consent*. Younger adults and females tend to think about others' information in their privacy definition as well. For example, one younger adult female says "privacy is keeping personal information about someone or something confidential when they don't explicitly give the ok to share the information." This definition clearly takes others' information into account. Additionally, older adults seem to prefer keeping things away from all others more.

In addition to sharing information with others, females tended to include others in the control of the private item. Females were more likely to mention others having control or that there is shared control. This shows that females may be more likely to think about privacy as a relationship, sharing in the information and control with other parties, whether they be all others or certain others.

Older adults, on the other hand, mentioned choice or ability much less than younger adults. Many older adults mentioned feeling helpless because "there isn't much we can keep out of someone's hand that is persistent in finding our information if they try hard enough."

Older adults also had a slightly different take on information than younger adults, mentioning more formal and specific pieces of information, such as health information, financial

information, and 'records.' Older adults also tended to focus their privacy definitions in terms of space, such as privacy in the home, personal space, and seclusion.

Future Work

Each of these trends is discussed under the caveat that each subgroup included a fairly small number of participants. It is very important that the goal of the current study was to collect privacy definitions and to understand the myriad of topics that participants discussed in these definitions. Given that there are 56 distinct bottom-level codes based on privacy definitions that were, on average, 23 words long, it is safe to say that privacy is complex. It will be very important to evaluate the privacy scenarios not only based on the goal of this study, the collection of contextual factors involved in privacy, but to also look to see if the trends exhibited in the privacy definitions hold in specific context. Contextually embedded conversations of privacy have been seen to elicit richer and more complex privacy definitions than privacy discussions in general (see Iachello, Truong, Abowd, Hayes, & Stevens, 2006 for a discussion), which could lead us to know more in the future about what actual behaviors people exhibit with regard to privacy.

It is interesting to note that, even given the major themes across participants, the context of how the codes were used was really important. For example, the term *keep* would imply that the items being kept were being kept from all others. However, many participants qualified this phrase, such as "keep information from those who have no right to know." This is a very different meaning than applied than just by the term itself, and further work will focus on connections between ideas mentioned in the privacy definitions.

In addition, data from India was collected with 15 younger adult students at Andhra University in Vishakapatnam , in a town called Andhra Pradesh in the southern part of India.

While privacy definitions and questionnaires are coded and ready to be used, data from this population was not included in this analysis. A further analysis of American adult definitions versus Indian adult definitions is currently underway.

Acknowledgements

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Appendix A – Interviewer Information

Privacy Focus Group Script

{INFORMED CONSENT}

I have given you two copies of the consent form, one copy is for us and the other is for your own records. Note that before you sign the consent forms, please make sure that you feel comfortable with participating today. If you decide for any reason that you are not able to participate today, let me know at any time. If you do not have any questions and you still wish to continue, you may sign the consent forms.

{INTRODUCTION}

Welcome, and thank you for your participation today. I would like to make a few introductions before we get started with the discussion. My name is Michelle and I will be leading the discussion today. Helping me today is Kelly – she will be writing things on the whiteboard and joining in the discussion as well.

Today we will discuss your ideas and concerns about privacy. We will be recording the session today. Because we care very much about what each of you has to say, please speak up. We don't want to miss anything that you have to say.

{DISCUSSION}

Now, we will move on to the focus group discussion. How many of you have participated in one of these before? We will be treating it just like a discussion. Before we begin, you should understand that there are no right or wrong answers, only different experiences and opinions. Feel free to express your opinions, perhaps in disagreement with another group member, as these types of discussions enable us to learn a lot about the different kinds of opinions that people have. In doing so, however, please remain respectful of the other members of the group.

A very important component to this type of study is confidentiality. There are two parts to this confidentiality that I wish to point out. First, as you read in the consent form, your name and your voice will not be tied to any of the data collected in this study. We will keep any information that ties you to the data on a password-protected computer in our lab. Secondly, we ask that anything we say in this room remain confidential amongst you guys. We hope that if you choose to talk about this study that you will not use each others names, and protect the identity of those in this room.

The session will last about two and a half hours. We would ask that you please turn off or silence your cell phones for this session. If there is something that Kelly or I can do to make you more comfortable, like get you a different chair or get you something to drink, please let us know. Also, before we begin, if you need to use the restroom, please do so now.

Ok, I'm going to turn on the tape recorder and begin recording now.

Discussion Questions

1) Please introduce yourself to the group by stating your first name and where you grew up/hometown.

2) We are here today to talk about privacy, so the first thing I would like to do is to have everyone take that blank piece of paper you see in front of you and write down your individual definition of privacy, or what it means to you. Feel free to brainstorm, but please work individually. When you are finished please fold the paper and put it in the envelope in front of you, and place the envelope under your chair or behind you. Thank you!

3) Ok, so what were some of the ways people defined privacy. Kelly will keep track of all the different things we have to say by writing them on the easel.
    a. Would anyone like to share their definition with the group?
    b. What are some key words you associate with privacy? What immediately pops into your head?

4) Now I'd like you all to think of the last time you thought about privacy before today.
    a. When was the last time that privacy came to your consciousness?
    b. What were you thinking or talking about it?
    c. Would anyone like to share their story with the group?

5) Group discussion (using examples that the group thought of)
        i. So what is privacy in these situations that we have just discussed?
        ii. What is private about [insert example]?

Scenarios

In the last section of this focus group, we are going to discuss privacy in a few different situations or contexts. We know that people think about privacy in many different ways: some people may have concerns in certain situations, and some people may not. So for each one of the scenarios we discuss, please express your concerns if you have some, and tell us a little bit about why that is a concern for you. If you feel that you do not have any concerns about the scenario, please tell us why not. If you feel that you have concerns other than privacy, please mention them briefly.

Since we are really interested in what concerns you may have and what types of things you may do in these situations, please try to put yourself in the role of the scenario as best as you can.

[For example, if the scenario is "You are walking in the supermarket," and you do not have any privacy concerns, it is quite alright to say "I am not concerned about privacy in the supermarket," instead of "Someone might be concerned with having the checkout person see what you are buying."]

Does anyone have any questions before we begin?

2) **You have a lifetime of photos you are thinking of storing on a website.**
    a. Standard Probes
        i. Do you have any privacy issues or concerns with this situation?
        ii. What about this situation makes it concerning?
        iii. Why

    b. Additions to this scenario
        i. What if you used a scrapbook?
        ii. What about an online photo album (like Flickr, Picasa, Snapfish, etc - Only say these if participants ask for examples.)?
        iii. What about if they were just photos from a recent trip?
        iv. What if there were sensitive photos included in your set?
        v. What if you could pick exactly who saw the photos?

3) **You are using your credit card to buy dinner in your favorite restaurant. When the waiter picks up the bill with your card in it, he takes the card in the other room for 5 minutes.**

a. Standard Probes
   i. Do you have any privacy issues or concerns with this situation?
   ii. What about this situation makes it concerning?
   iii. Why

b. Additions to this scenario
   i. What if the restaurant is one that you've never been to before?
   ii. What about using your credit card to order takeout online?
      1. At home
      2. In a crowded place (library, work)
      3. On a network that is not yours
   iii. Sometimes when you fly you have to swipe your credit card at the airport kiosk to pull up the flight information.
   iv. Are there any other times when using your credit card that you think about privacy?
   v. Participants may say "This is something that I've done before and I feel confident that nothing will happen" or something to that effect. If so – say "Do you remember the first time that you did ___? Did you have a different experience then?"

4) **Health Information: You have the symptoms of a an illness that have lasted for over a week. You call your doctor's office and describe your symptoms to a nurse.**

a. Standard Probes
   i. Do you have any privacy issues or concerns with this situation?
   ii. What about this situation makes it concerning?
   iii. Why

b. Additions to this scenario
   i. What about if you are in a crowded room?
   ii. What if your symptoms were more serious? Embarrassing? (AIDS, Mental Health, STDs)
   iii. What about finding information about a health issue that you have online?
      1. "Is there anything that you wouldn't look for online?"

5) **Location: You are using a cell phone with a locating device (such as GPS). You find out that there is a way for <u>anyone in the world</u> to find out your exact location.**

   a. Standard Probes
      i. Do you have any privacy issues or concerns with this situation?
      ii. What about this situation makes it concerning?
      iii. Why

   b. Additions to this scenario
      i. What if your location was approximate?
      ii. Would it matter if only certain people could determine your location? [for example, only those in your family's cell phone plan]
      iii. Grocery Store
      iv. Out to dinner
      v. Home

6) **Traffic Light: Atlanta is trying to crack down on traffic violations by installing traffic cameras on every stop light. These cameras monitor traffic and then take a snapshot of anything out of the ordinary, such as someone running a red light. (Red-light camera)**

   a. Standard Probes
      i. Do you have any privacy issues or concerns with this situation?
      ii. What about this situation makes it concerning?
      iii. Why

   b. Additions to this scenario
      i. What if there were video cameras recording at all times?
      ii. What if this info was available to anyone on a certain TV channel?
      iii. What if Atlanta was going to crack down on traffic violations by placing more cops at intersections around town?
      iv. If participants say that there is no benefit from this – ask "What if cops needed to see if it was you driving your car, or if you were using your cell phone?"

7) **Conversation: You are having a conversation with friends at home.**

a. Standard Probes

i. Do you have any privacy issues or concerns with this situation?

ii. What about this situation makes it concerning?

iii. Why

b. Additions to this scenario

i. What about in another location, such as a crowded park? Small coffee shop? Taxi/subway?

ii. What about on the phone?

iii. What about if you are discussing politics or religion?

iv. What about if this conversation is taking place over instant messenger? Over a video conference? Or an internet forum? ("What if I asked you to give me your im conversations that are logged?")

Extras

8) Having guests over? (kind of like conversation one)

9) Overhearing someone's cell phone conversation (kind of like having conversation one)

10) Being emotional/sick in front of strangers

11) Imagine you are creating a website about you

12)

Standard follow-ups for all questions:

If off track – say, "That's good, but the focus of this question is [repeat part of question]."

If need additional probe – say, "Any [others, more, one else, thing else]?"

If need explanation – say, "What do you mean?"

If use the term 'privacy' or 'private' – say, "Can you use another word instead of 'private' or 'privacy' in that statement?

Repeat Privacy Definitions

We have talked a lot about different privacy concerns today, so now we would like to revisit an exercise we did at the beginning of the focus group. I'd like you to each take the additional piece of paper in front of you and write out your definition of privacy. Once you are done, please fold the piece of paper and place it in the same envelope as before.

Final questions

So, let's just think back over this hour and a half that we've been together, and try to summarize it a bit.

1) Please sum up your thoughts about privacy into a few sentences. What is your personal take-away from this session?
2) Next, please think about what everyone in the session discussed. If you were going to tell someone who was not here today what the important parts of the discussion were, what would you say?
3) Have your views about privacy changed over the years? Are there circumstances that have changed your views?

OK, we are finished with the discussion. Does anyone have any questions? I am turning the tape recorder off now.

Please complete this technology experience questionnaire. After you complete this questionnaire you are free to go. Thank you for your participation in this focus group.

India Focus Group Checklist

Participant Materials

☐ #1 – **PAQ**: Privacy Attitudes Questionnaire (1/participant)
☐ #2 – **CON**: Consent Form (2/participant) – different for younger vs. older adults
☐ #3 – **DHQ**: Demographics and Health Questionnaire
☐ #4 – **TEQ**: Technology Experience Questionnaire
☐ #5 – 1 blank sheet of white paper
☐ #6 – 1 blank sheet of yellow paper
☐ #7 – 1 envelope
☐ #8 – **MEQ**: Moderator Effect Questionnaire

Experimenter Materials

☐ Script
☐ Compensation
☐ 'Do not disturb' sign for door
☐ Voice Recorders
☐ Batteries
☐ Chalk/Chalkboard
☐ Voice Recorders

<u>When recruiting:</u>

- We require participants between the follow age ranges only (but if you cannot get enough participants please branch out from there as you see necessary):
    - 18-28
    - 65-75
- Please have participants fill out the Privacy Attitudes Questionnaire (#1 - **PAQ**) when recruiting if possible.

<u>When participants arrive:</u>

- Hand them a packet with the following items:
    - Privacy Attitudes Questionnaire (if not completed already) (#1 – **PAQ**)
    - 2 copies of the consent form (these differ based on younger adults vs. older adults based on compensation) (#2 – **CON**)
    - Demographics and Health Questionnaire (#3 – **DHQ**)
    - Technology Experience Questionnaire (#4 – **TAQ**)
    - 1 blank sheet of white paper
    - 1 blank sheet of yellow paper (or any color, or distinguishable from the first one in some way)
    - 1 envelope

<u>When the focus group is over:</u>

- Administer the Moderator Effects Questionnaire (#8 – **MEQ**)

Appendix B – Participant Materials

Credit Consent Form

Georgia Institute of Technology

Project Title: Privacy and Technology: Folk Definitions and Behaviors
Investigators: *Dr. Wendy A. Rogers, Dr. Arthur D. Fisk, Michelle Kwasny & Kelly Caine*

Research Consent Form

You are being asked to be a volunteer in a research study.

Purpose:

The purpose of this form is to inform you about your rights as a research volunteer. Feel free to ask any questions that you may have about the study, what you will be asked to do, and so on.

Thank you for your interest in participating in the study. Our work could not be completed without the help of volunteers. The purpose of this experiment is to understand privacy issues in general and as they relate to technology. We are doing this by asking about 15 older adults and about 15 younger adults to participate in focus group discussions about their perceptions of privacy. With this information, we hope to help inform privacy theory as well as inform designers about the privacy concerns that people may have.

Procedures:

If you decide to participate in this study, your part will involve taking part in a focus group with the experimenter, an assistant, and 5-7 other participants.

It will probably take about 2-2.5 hours to complete this study. You are welcome to take a break at any time during the study. This focus group discussion will be audio-taped and your responses will

be transcribed for later analysis. However, your answers to the focus group questions will not be personally identifiable. There is no deception in this study and you can ask any question at any time.

Risks/Discomforts

The following risks/discomforts may occur as a result of your participation in this study:

- Participation in this study involves minimal risk or discomfort to you. The risks involved are no greater than those involved in daily activities such as having a long conversation or doing normal paperwork.

Benefits

The following benefits to you are possible as a result of being in this study:

- You are not likely to benefit substantially from participating in this study. However, your participation will help us obtain information about how adults view privacy. In addition, we hope that others will benefit from what we find in this study.
- If you would like to receive the results of this study, please make sure that we have your contact information.

Compensation to You

You will receive 1 hour of extra credit for each hour you spend in the study. The time to complete the study is approximately 2-2.5 hours, so you will receive 2-2.5 hours of extra credit. If you do not complete the study, you will receive credit based on the time that you were involved in the study.

Confidentiality

The following procedures will be followed to keep your personal information confidential in this study: The data that are collected about you will be kept private to the extent allowed by law. To protect your privacy, your records will be kept under a code number rather than by name. Your records will be kept in locked files and

only study staff will be allowed to look at them. Your name and any other fact that might point to you will not appear when results of this study are presented or published. The audio recordings of the focus group will be transcribed and your name will not be included in the transcription. Audio files will be permanently deleted within approximately 2 weeks of transcription.

Confidentiality cannot be guaranteed; your personal information may be disclosed if required by law. This means that there may be rare situations that require us to release personal information about you, for example, in case a judge requires such release in a lawsuit.

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB will review study records. The Office of Human Research Protections may also look at study records.

Because each individual's data are completely confidential, we cannot mail your individual results. We will mail the group results and a summary of the conclusions once the project is completed.

In Case of Injury/Harm:

Reports of injury or reaction should be made to:
Dr. Wendy Rogers at (404) 894-6775 or
Dr. Arthur Fisk at (404) 894-6066

Neither the Georgia Institute of Technology nor the principal investigator has made provision for payment of costs associated with any injury resulting from participation in this study.

Research Participant Rights

- Your participation in this study is voluntary. You do not have to be in this study if you do not want to be.
- You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.
- Any new information that may make you change your mind about being in this study will be given to you.
- You will be given a copy of this consent form to keep.

- You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Participant

- If you have any questions about the study, you may contact the investigator at 404-385-0798 or 404-894-8344.
- If you have any questions about your rights as a research participant, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

_____

Participant Name

Participant Signature	**Date**
Signature of Person Obtaining Consent	**Date**

If you must cancel a scheduled time to come to the lab, please call: (404) 894-8344.

Appendix B – Participant Materials

Pay Consent Form

Georgia Institute of Technology

Project Title: Privacy and Technology: Folk Definitions and Behaviors

Investigators: *Dr. Wendy A. Rogers, Dr. Arthur D. Fisk, Michelle Kwasny & Kelly Caine*

Research Consent Form

You are being asked to be a volunteer in a research study.

Purpose:

The purpose of this form is to inform you about your rights as a research volunteer. Feel free to ask any questions that you may have about the study, what you will be asked to do, and so on.

Thank you for your interest in participating in the study. Our work could not be completed without the help of volunteers. The purpose of this experiment is to understand privacy issues in general and as they relate to technology. We are doing this by asking about 15 older adults and about 15 younger adults to participate in focus group discussions about their perceptions of privacy. With this information, we hope to help inform privacy theory as well as inform designers about the privacy concerns that people may have.

Procedures:

If you decide to participate in this study, your part will involve taking part in a focus group with the experimenter, an assistant, and 5-7 other participants.

It will probably take about 2-2.5 hours to complete this study. You are welcome to take a break at any time during the study. This

focus group discussion will be audio-taped and your responses will be transcribed for later analysis. However, your answers to the focus group questions will not be personally identifiable. There is no deception in this study and you can ask any question at any time.

Risks/Discomforts

The following risks/discomforts may occur as a result of your participation in this study:

- Participation in this study involves minimal risk or discomfort to you. The risks involved are no greater than those involved in daily activities such as having a long conversation or doing normal paperwork.

Benefits

The following benefits to you are possible as a result of being in this study:

- You are not likely to benefit substantially from participating in this study. However, your participation will help us obtain information about how adults view privacy. In addition, we hope that others will benefit from what we find in this study.
- If you would like to receive the results of this study, please make sure that we have your contact information.

Compensation to You

You will receive $10 per hour for each hour you spend in the study. The time to complete the study is approximately 2-2.5 hours, so you will receive about $25.

Confidentiality

The following procedures will be followed to keep your personal information confidential in this study: The data that are collected about you will be kept private to the extent allowed by law. To protect your privacy, your records will be kept under a code number rather than by name. Your records will be kept in locked files and only study staff will be allowed to look at them. Your name and any

other fact that might point to you will not appear when results of this study are presented or published. The audio recordings of the focus group will be transcribed and your name will not be included in the transcription. Audio files will be permanently deleted within approximately 2 weeks of transcription.

Confidentiality cannot be guaranteed; your personal information may be disclosed if required by law. This means that there may be rare situations that require us to release personal information about you, for example, in case a judge requires such release in a lawsuit.

To make sure that this research is being carried out in the proper way, the Georgia Institute of Technology IRB will review study records. The Office of Human Research Protections may also look at study records.

Because each individual's data are completely confidential, we cannot mail your individual results. We will mail the group results and a summary of the conclusions once the project is completed.

In Case of Injury/Harm:

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Dr. Wendy Rogers at (404) 894-6775 or
Dr. Arthur Fisk at (404) 894-6066

Neither the Georgia Institute of Technology nor the principal investigator has made provision for payment of costs associated with any injury resulting from participation in this study.

Research Participant Rights

- Your participation in this study is voluntary. You do not have to be in this study if you do not want to be.
- You have the right to change your mind and leave the study at any time without giving any reason, and without penalty.
- Any new information that may make you change your mind about being in this study will be given to you.
- You will be given a copy of this consent form to keep.

- You do not waive any of your legal rights by signing this consent form.

Questions about the Study or Your Rights as a Research Participant

- If you have any questions about the study, you may contact the investigator at 404-385-0798 or 404-894-8344.
- If you have any questions about your rights as a research participant, you may contact Ms. Melanie Clark, Georgia Institute of Technology at (404) 894-6942.

If you sign below, it means that you have read (or have had read to you) the information given in this consent form, and you would like to be a volunteer in this study.

_____

Participant Name

Participant Signature	**Date**
Signature of Person Obtaining Consent	**Date**

If you must cancel a scheduled time to come to the lab, please call: (404) 894-8344.

Privacy Attitudes Questionnaire

The purpose of this set of questions is to understand your privacy attitudes. Please answer the following eight questions by placing a check mark at the chosen response.

1. Consumers have lost all control over how personal information is collected and used by companies.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

2. Most businesses handle the personal information they collect about consumers in a proper and confidential way.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

3. Existing laws and organizational practices provide a reasonable level of protection for consumer privacy today.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

4. I am concerned about online identity theft.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

5. I am concerned about my privacy online.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

6. I am concerned about my privacy in everyday life.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

7. I am likely to read the privacy policy of an ecommerce site before buying anything.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

8. Privacy policies accurately reflect what companies do.

☐	☐	☐	☐	☐
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

Appendix B – Participant Materials > Contact Form

Name: ☐ Dr. ☐ Mr. ☐ Mrs. ☐ Ms. ☐ Miss

_____
First name Middle Initial

Last Name

Date of Birth: _____/_____/_____
Month Day Year

Phone #: Home (_____) _____-_____

Gender: ☐1 Male ☐2 Female

Work (_____) _____-_____

Main Address:

_____
Street

_____
City

_____

Second Address (part of the year):

_____

_____
State Zip Code

Email Address

_____

When are you at this address?

_____

1. Education <u>completed</u> (check <u>highest</u> level)

☐1 Less than high school graduate (highest grade completed? _____)

☐2 High school graduate/G.E.D.

☐3 Some college, or trade, technical, or business school (how many years? _____)

☐4 Bachelor's degree

☐5 Some graduate work (how many years? _____)

☐6 Master's degree

☐7 M.D., J.D., Ph.D., other advanced degree

2. Current marital status (check <u>one</u>)

☐1 Single

☐2 Married

☐3 Separated

☐4 Divorced

☐5 Widowed

☐6 Other (please specify _____)

3. Race/ethnicity

☐1 Black/African American

☐2 Asian American/Pacific Islander

☐3 White/Caucasian

☐4 Hispanic/Latino

☐5 American Indian/Alaskan Native

☐6 Multiracial (please specify _____)

☐7 Other (please specify _____)

4. In which type of housing do you live?

☐1 Residence hall/College dormitory

☐2 House/Apartment/Condominium

☐3 Senior housing (independent)

☐4 Assisted living

☐5 Nursing home

☐6 Relative's home

☐7 Other (please specify _____)

5. **Do you live alone a majority of the year?**
   - ☐1 Yes
   - ☐2 No

6. **What is your primary language?**
   - ☐1 English
   - ☐2 Spanish
   - ☐3 French
   - ☐4 Creole
   - ☐5 Portuguese
   - ☐6 Other _____

7. **Occupational status (check <u>all</u> that apply)**
   - ☐1 Working full-time
   - ☐2 Working part-time
   - ☐3 Student
   - ☐4 Homemaker
   - ☐5 Retired
   - ☐6 Volunteer worker
   - ☐7 Seeking employment, laid off, etc.
   - ☐8 Leave of absence
   - ☐9 Other (please specify):

8. **What is your current occupation? _____**

<u>If retired:</u>

9. **What was your primary occupation? _____**

10. **What year did you retire? _____**

Appendix B – Participant Materials >

Demographics and Health Questionnaire

Please answer the following questions. All of your answers will be treated confidentially. Any published document regarding these answers will not identify individuals with their answers. **If there is a question you do not wish to answer, please just leave it blank and go on to the next question.** Thank you in advance for your help.

Demographics Questionnaire

Gender: Male ☐1 Female ☐2 Date of Birth: __ __ / __ __ / __ __ Age: _____

10. What is your highest level of education?

☐1 No formal education
☐2 Less than high school graduate
☐3 High school graduate/GED
☐4 Vocational training
☐5 Some college/Associate's degree
☐6 Bachelor's degree (BA, BS)
☐7 Master's degree (or other post-graduate training)
☐8 Doctoral degree (PhD, MD, EdD, DDS, JD, etc.)

11. Current marital status (check <u>one</u>)

☐1 Single
☐2 Married
☐3 Separated
☐4 Divorced
☐5 Widowed
☐6 Other (please specify) _____

12. Do you consider yourself Hispanic or Latino?

☐1 Yes

☐$_2$ No

3 a. If "Yes", would you describe yourself:

☐$_1$ Cuban
☐$_2$ Mexican
☐$_3$ Puerto Rican
☐$_4$ Other (please specify) _____

13.How would you describe your primary racial group?

☐$_1$ No Primary Group
☐$_2$ White Caucasian
☐$_3$ Black/African American
☐$_4$ Asian
☐$_5$ American Indian/Alaska Native
☐$_6$ Native Hawaiian/Pacific Islander
☐$_7$ Multi-racial
☐$_8$ Other (please specify) _____

14.In which type of housing do you live?

☐$_1$ Residence hall/College dormitory
☐$_2$ House/Apartment/Condominium
☐$_3$ Senior housing (independent)
☐$_4$ Assisted living
☐$_5$ Nursing home
☐$_6$ Relative's home
☐$_7$ Other (please specify) _____

15.Which category best describes your yearly household income. Do not give the exact amount, just a range or approximate family income:

_____

16.Is English your primary language?

☐$_1$ Yes
☐$_2$ No

7 a. If "No", What is your primary language? _____

8. What is your primary mode of transportation? (Check <u>one</u>)

☐$_1$ Drive my own vehicle
☐$_2$ A friend or family member takes me to places I need to go
☐$_3$ Transportation service provided by where I live
☐$_4$ Use public transportation (e.g., bus, taxi, subway, van services)

<u>Occupational Status</u>

9. What is your primary occupational status? (Check <u>one</u>)

☐$_1$ Work full-time
☐$_2$ Work part-time
☐$_3$ Student
☐$_4$ Homemaker
☐$_5$ Retired
☐$_6$ Volunteer worker
☐$_7$ Seeking employment, laid off, etc.
☐$_8$ Other (please specify) _____

10. Do you currently work for pay?

☐$_1$ Yes, Full-time
☐$_2$ Yes, Part-time
☐$_3$ No

10 a. If "Yes", what is your primary occupation? _____

If retired:

11. What was your primary occupation? _____

12. What year did you retire? _____

Health Information

1. In general, would you say your health is:

☐1	☐2	☐3	☐4	☐5
Poor	Fair	Good	Very good	Excellent

2. Compared to other people your own age, would you say your health is:

☐1	☐2	☐3	☐4	☐5
Poor	Fair	Good	Very good	Excellent

3. How satisfied are you with your present health?

☐1	☐2	☐3	☐4	☐5
Not at all satisfied	Not very satisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied

4. How often do health problems stand in the way of your doing the things you want to do?

☐1	☐2	☐3	☐4	☐5
Never	Seldom	Sometimes	Often	Always

6. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? Check <u>one</u> box for each type of activity.

	Yes1, **Limited a lot**	Yes2, **Limited a little**	No3, **Not limited at all**
a. Bathing or dressing yourself			
b. Bending, kneeling, or stooping			
c. Climbing **one** flight of stairs			
d. Climbing **several** flights of stairs			
e. Lifting or carrying groceries			
f. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf			

g. Vigorous activities, such as running, lifting heavy objects, or participating in strenuous sports (e.g., swimming laps)			
h. Walking **more than a mile**			
i. Walking **one block**			
j. Walking **several blocks**			

6. Are you on post-menopausal estrogen replacement therapy?

☐1 Yes ☐2 No ☐3 Not applicable

7. For each of the following conditions please indicate if you have ever had that condition in your life, have the condition now at this time or never had the condition. Check <u>one</u> box for each condition.

Condition	**In your lifetime$_1$**	**Now$_2$**	**Never$_3$**
a. Arthritis			
b. Asthma or Bronchitis			
c. Cancer (other than skin cancer)			
d. Diabetes			
e. Epilepsy			
f. Heart Disease			
g. Hearing Impairment			
h. Hypertension			
i. Stroke			
j. Vision Impairment			
k. Other significant illnesses (please list)			

Medication Usage Details

Please list all medical products that you are currently taking. Include medicinal herbs, vitamins, aspirin, antacid, nasal spray, laxatives, etc., as well as prescription medications (copy names from label if possible). This information will be completely confidential.

EXAMPLE

Name of Medication: Zarontin

Reason for taking: epilepsy Dosage (ea. time taken): 500 mg

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? 3

What time of day do you take the medication? morning, afternoon, evening

How long you have been taking the medication? 5 years

Does this medication cause any problems? makes me sleepy

1. Name of Medication: _____

Reason for taking: _____ Dosage (ea. time taken): _____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

2. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

3. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

4. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

5. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

6. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

7. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

8. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

9. Name of Medication: _____

Reason for taking:_____ Dosage (ea. time taken):_____

How often do you take the medication? (circle one)

daily every other day weekly as needed

On days that you take the medication, how many times per day do you take it? _____

What time of day do you take the medication? _____

How long you have been taking medication? _____

Does this medication cause any problems? _____

_____

TECHNOLOGY AND COMPUTER EXPERIENCE QUESTIONNAIRE

The purpose of this set of questions is to assess your familiarity and experience with technology. Please answer all questions by placing a check mark at the appropriate response.

1. How often do you communicate with other people (e.g., family members, friends, doctors, customer service representatives)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

2. Within the last year, which of the following methods have you **used** for communication?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Answering machine						
2. Cell phone						
3. Fax machine						
4. Internet (e.g., e-mail, chat room, videoconferencing)						
5. Telephone						
6. Videophone						

3. How often do you go shopping?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

4. Within the last year, which of the following have you **used** for shopping?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Credit card						
2. Debit card						
3. In-store automated kiosk (e.g., self-checkout, price scanner, item locator)						
4. Internet (e.g., on-line purchasing, on-line product evaluation)						
5. Telephone						
6. Television shopping						

5. How often do you use customer service functions (e.g., technical support, product assistance, reservations)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

6. Within the last year, which of the following have you **used** for customer service (e.g., technical support, product assistance, reservations)?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Automated telephone menu system						
2. CD/DVD						
3. E-mail						
4. Fax machine						
5. Internet (e.g., on-line manuals, on-line interactive support, web site)						
6. Person on the telephone						

7. How often do you make financial transactions (e.g., bill paying, banking, investing/ financial planning, tax preparation)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

8. Within the last year, which of the following have you **used** for financial transactions (e.g., bill paying, banking, investing/financial planning, tax preparation)?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Automated telephone menu system (e.g., banking, credit card information)						
2. Automatic teller machine (ATM)						
3. Drive-through banking						
4. Internet (e.g., on-line banking, on-line bill paying, on-line investing)						
5. Person on the telephone						
6. Software (e.g., Quicken, spreadsheet, MS Money, TurboTax)						

9. How often do you engage in healthcare related activities for yourself or others (e.g., going to see a doctor, checking blood pressure, finding information about a disease or medication)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

10. Within the last year, which of the following have you **used** for healthcare related activities for yourself or others?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Automated telephone menu system						
2. Health information searching on the Internet						
3. Internet communication (e.g., e-mail, computer support groups)						
4. Medical-related Internet purchasing (e.g., medication or medical supplies)						
5. Person on the telephone						
6. Telemedicine (e.g., videoconferencing with doctors or nurses)						

11. How often do you use healthcare devices at home for yourself or others (e.g., glucose monitor, blood pressure monitor)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

12. Within the last year, which of the following healthcare devices have you **used** in your home?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Blood pressure measurement device						
2. Digital thermometer						
3. Electronic dental hygiene system (e.g., electric toothbrush, Waterpik)						
4. Emergency call system (e.g., Lifeline)						
5. Heating pads						
6. Infusion pump						
7. Monitoring device (e.g., glucose, apnea, cardiac)						
8. Nebulizers						
9. Oxygen equipment						

13. How often do you use public transportation (e.g., train, bus, subway)?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

14. How often do you drive?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

15. How often do you travel by airplane?

- ☐$_1$ Weekly
- ☐$_2$ Monthly
- ☐$_3$ Quarterly
- ☐$_4$ Yearly
- ☐$_5$ Never

16. Within the last year, which of the following transportation-related systems have you **used**?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Automated telephone menu system						
2. Automatic check-in station						
3. Automatic parking payment station						
4. Automatic ticket purchase station						
4. Cruise control in your car						
5. In-car navigation system (e.g., GPS, OnStar, Neverlost)						
6. On-line travel schedule						
7. Personal digital assistant (PDA)						
8. Person on the phone						
9. Remote control to start the car						
10. Travel direction/ map software (e.g., MapQuest, Streets & Trips, Keyhole)						

17. How often do you engage in leisure/hobby/entertainment-related activities?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

18. Within the last year, which of the following leisure/hobby/entertainment-related systems have you **used**?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Books on tape (audio book)						
2. Computer/Video game (e.g., Gameboy, PlayStation, Nintendo, GameCube, X-Box)						
3. Digital photography (e.g., camera, camcorder)						
4. Fitness device (e.g., pedometer, pulse meter, golf swing enhancer, treadmill)						
5. Hobby-specific computer usage (e.g., Internet, Photoshop, genealogy software, patterns)						
6. MP3/IPOD						
7. Personal digital assistant (PDA)						
8. Recording and playback device (e.g., CD, DVD, VCR)						
9. TV set-top box (e.g., program TV, pay-per view movies, music						

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
stations, TiVo)						

19. How often do you engage in learning/educational/self-help activities?

- ☐$_1$ Daily
- ☐$_2$ Weekly
- ☐$_3$ Monthly
- ☐$_4$ Yearly
- ☐$_5$ Never

20. Within the last year, which of the following learning/educational/self-help-related systems have you **used**?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Computer-based instruction (e.g., CD, DVD, VCR)						
2. Computer support group (e.g., chat room, discussion forum)						
3. Digital or tape recorder						
4. Internet searching (e.g., Google, directories, URLs, newspapers)						
5. Language learning and translation systems						
6. Online library database/catalog						

21. On average, how many hours per day do you spend at home?

- ☐$_1$ Less than 8 hours
- ☐$_2$ 8-11 hours
- ☐$_3$ 12-15 hours
- ☐$_4$ 16-19 hours
- ☐$_5$ 20-24 hours

22. Within the last year, which of the following home-based systems have you **used**?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Garage door opener						
2. Microwave oven						
3. Home security system (e.g., visitor entry directory system, home alarm, gate access)						
4. Personal computer						
5. Programmable device (e.g., lights, thermostat, sprinkler, programmable food processor, programmable coffee maker)						
6. Robot (e.g., vacuum cleaner, lawn mower)						

23. On average, how many hours **per week** do you work (including volunteer work) in or out of the home? (For the purpose of this question you should not consider activities such as homemaking or family caregiving)

- ☐$_1$ 0
- ☐$_2$ 1 – 10 hours
- ☐$_3$ 11 – 20 hours
- ☐$_4$ 21 – 30 hours
- ☐$_5$ 31 – 40 hours
- ☐$_6$ More than 40 hours

24. Within the last year, which of the following technologies have you **used** in the context of your work?

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
1. Bar code scanner						
2. Cell phone						
3. Computer						
4. Copier/scanner						
5. Recording or playback device (e.g., CD, DVD, VCR)						
6. Electronic cash register (point of sale terminal)						
7. E-mail						
8. Fax machine						
9. Internet						
10. LCD projector						
11. Multifunction telephone system (e.g., with conferencing, speaker, transfer capabilities)						
12. Pager/Beeper						
13. Personal digital assistant (PDA)						
14. Voice recorder (e.g., dictaphone, digital recording system,						

	Not sure what it is$_1$	Never$_2$	Once in a while$_3$	Some of the time$_4$	Most of the time$_5$	Always$_6$
handheld tape recorder)						

25. For each of activities listed in the table, please indicate how important technology is to the performance of the activity.

	Not at all important$_1$	Somewhat important$_2$	Neutral$_3$	Important$_4$	Very important$_5$
1. Communication activities					
2. Customer service activities					
3. Financial transaction activities					
4. Healthcare related activities for yourself or others					
5. Home activities					
6. Learning/education/ self-help activities					
7. Leisure/hobby/ entertainment activities					
8. Shopping activities					
9. Transportation activities					
10. Use of healthcare devices in your home					
11. Work activities					

26. How much more training would you like to have in the use of technology?

- ☐$_1$ None
- ☐$_2$ A little
- ☐$_3$ Moderate training
- ☐$_4$ A lot

27. Have you had experience with computers?

☐$_1$ Yes

☐$_2$ No (Skip the rest of the questionnaire)

28. For each input device listed below, please indicate how much experience you have had with the device in the past year.

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
1. Joystick					
2. Keyboard					
3. Light-pen					
4. Mouse					
5. Rotary input knob					
6. Speech Recognition System					
7. Touch screen with finger					
8. Touch screen with stylus					
9. Trackball					

29. For each basic computer operation listed below, please indicate how much experience you have had with the operation in the past year.

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
1. Delete a file					
2. Insert a disk/CD/DVD					
3. Install software					

4. Open a file					
5. Save a file					
6. Set printer options					
7. Set monitor options					
8. Transfer files					
9. Use a printer					
10. Use cut-and-paste operations					

30. For each item listed below, please indicate how much experience you have had with the item in the past year.

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
1. Apple (Macintosh) operating system					
2. CD/DVD creation software					
3. Computer graphics (e.g., Photoshop, Harvard Graphics, AutoCAD)					
4. Conferencing software					
5. Database management (e.g., Access, Filemaker, Lotus 123)					
6. E-mail					
7. Home computer network (e.g., wire or wireless)					
8. Instant messaging					
9. Internet phone					
10. Presentation software (e.g., PowerPoint, Freelance)					
11. Programming package (e.g.,					

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
Basic, C++, Fortran, Java)					
12. Spreadsheet (e.g., Excel, Quattro Pro)					
13. Statistical package (e.g., SPSS, SAS)					
14. UNIX/LINUX operating system					
15. Web design software (e.g., Java, HTML)					
16. Windows operating system					
17. Word processing (e.g., Microsoft Word, WordPerfect)					

31. For each windows operation listed below, please indicate how much experience you have had with the operation in the past year.

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
1. Change audio settings					
2. Change screen settings					
3. Change network settings					
4. Click icon					
5. Close a window					
6. Empty trash					
7. Manage multiple windows					
8. Move between windows					
9. Open a window					
10. Perform operations using right click on mouse					
11. Resize a window					
12. Scroll horizontally					
13. Scroll vertically					
14. Search for files					
15. Update the clock					

	Not sure what it is$_1$	Never used$_2$	Used once$_3$	Used occasionally$_4$	Used frequently$_5$
16. Use drop-down menu					
17. Use windows help system					

Internet Questionnaire

The purpose of this set of questions is to assess your familiarity and experience with the Internet. Please answer all questions by placing a check mark on or filling in the appropriate response.

1. About how many hours a week do you use the Internet?

- ☐$_1$ Never (Skip the rest of the questionnaire)
- ☐$_2$ Less than one hour a week
- ☐$_3$ Between 1 hour and 5 hours a week
- ☐$_4$ Between 6 hours and 10 hours a week
- ☐$_5$ Between 11 hours and 15 hours a week
- ☐$_6$ **More 15 hours a week**

2. How long have you been using the Internet?

- ☐$_1$ Less than 6 months
- ☐$_2$ Between 6 months and 1 year
- ☐$_3$ More than 1 year, but less than 3 years
- ☐$_4$ More than 3 years, but less than 5 years
- ☐$_5$ **More than 5 years**

3. Compared to a year ago, has your use of the Internet changed?

- ☐$_1$ No change
- ☐$_2$ Increase in use
- ☐$_3$ Decrease in use

4. If your use has changed, please explain why in a few words (e.g., training, equipment problems, frustration)

_____

_____

_____

5. What was the primary **method that you used to learn to use the Internet?**

- ☐$_1$ I taught myself by exploring it on my own
- ☐$_2$ I read books on how to use the Internet
- ☐$_3$ I attended a class

☐$_4$ I learned from a friend or family member
☐$_5$ I used an online tutorial
☐$_6$ I used a CD or videotape
☐$_7$ Other ways (please specify below): _____
☐$_8$ ------ *None of the Above* --------

6. Please specify the frequency with which you have performed each of the following activities using the Internet in the past year.

	Never used$_1$	Used once$_2$	Used occasionally$_3$	Used frequently$_4$
1. Banking/Money management (e.g., pay bills online, buy or sell stocks)				
2. Communication (e.g., e-mail, instant messaging)				
3. Community information (e.g., find information about community events or religious services)				
4. Education (e.g., participate in on-line degree or training program, search for information about educational courses or materials, use instructional/training software)				
5. Employment (e.g., post resume or search for information about employment)				
6. Entertainment (e.g., purchase tickets for cultural or entertainment events, find information about TV or radio shows, cultural or entertainment events, or information related to hobbies)				
7. Government and official issues (e.g., access a government website to download standard forms or find out information about				

	Never used$_1$	Used once$_2$	Used occasionally$_3$	Used frequently$_4$
benefits and programs)				
8. Health information (e.g., find information about an illness or order medication or health product)				
9. News information (e.g., find information about the weather, read the newspaper)				
10. Shopping (e.g., purchase clothes, search for information about a product)				
11. Travel (e.g., make airline, train, hotel, or rental car reservations, search for maps, travel information)				

Moderator Effects Questionnaire

The purpose of this set of questions is to understand how the moderator affected your willingness or comfort in sharing information. Please answer the following questions so that we can improve the accuracy of this focus group in the future.

1. Did the moderator's gender have an effect on what you were willing to share?

□ Yes □ No

If yes, in what ways did this affect you?

2. Did the moderator's language have an effect on what you were willing to share?

□ Yes □ No

If yes, in what ways did this affect you?

3. Did anything else about the moderator have an effect on what you were willing to share?

□ Yes □ No

If yes, what? …and in what ways did this affect you?

Appendix C – Continuing Study Materials

Pictures


Welcome to
the Focus
Group!

Appendix D – Coding Materials

Privacy Definition Codes and Code Definitions

	Bottom-level codes	Definition of codes
Locus of Control (top-down)		***Who has control over the "information" or things?***
	Locus of Control\both (both parties have a say)	Both parties have control - it is a relationship of control.
	Locus of Control \external (they are in control)	They are in control only.
	Locus of Control\internal (you are in control)	I am in control only.
Information/Disclosure		
Information/Disclosure\ Whose information? (top-down)		Whose information is it?
	Information/Disclosure\Who's information?\both	It is both my information and their information.
	Information/Disclosure\Who's information?\theirs	It is their information.
	Information/Disclosure\Who's information? \yours	It is my information.
Information		
	Information/Disclosure\disclosure / sharing	involves disclosing something, revealing something
	Information/Disclosure\access	similar to disclosure, but implies that the action of getting into the information lies with the one accessing not the one who owns the information
	Information/Disclosure\information	knowledge, data
	Information/Disclosure\ownership	there is an owner of the information
Secret/hidden		
	Secret/hidden\secret	keeping something a secret, specifically mentions 'secret'
	Secret/hidden\confidentiality	another term for secret, but specifically mentions 'confidential'
	Secret/hidden\hidden	opposite of disclosure, keeping something hidden or away from others
Others		
Others\Includes Others?		Who is involved in the privacy definition?
	Others\Includes Others?\includes others	My definition of privacy includes all others - I talk about all others as a group and will share certain things with them or not, but I do not discriminate who.
	Others\Includes Others?\includes certain others	My definition of privacy includes some others - I want to keep some people away and some people I share with.
	Others\Includes Others?\does not include others	My definition of privacy excludes all others - I want to keep things entirely to myself.
Others\Why?		I include people who… or I don't include people who…
	Others\Why?\no right/need to know/none of your business	"It's none of your business" OR "you have no need to know" - general term people use for why they would not share with someone; doesn't concern you, similar to "no right/need to know";
	Others\Why?\trust	whom I trust
	Others\Why?\keep / protect	explicitly use the term "keep" or "protect" - retain something for yourself
	Others\Why?\boundary	I set a boundary for myself, may expicitly use the term "boundary"
	Others\Why?\consent	I have to approve those accessing my stuff, or

		give "consent"
	Others\Why?\from the public	I designate that some stuff is "away from the public" or I mention public, aka those outside your boundary for something
	Others\Why?\control	I discuss control, or broader term that means making many decisions about your information as a whole - having an eye on the global picture of your information
Choice		
	Choice\decision	involves making a decision or choice, maybe who you share with or what you share
	Choice\preference	goes along with decision: there are some things that you may prefer to keep to yourself and some things you prefer to share, or some people, etc.; can also be wish or want (desire)
Respect/violation		
	Respect/violation\violation	privacy should not be violated; opposite of respected I think
	Respect/violation\respect	having others respect your decisions
Privacy is...		
	Privacy is...\ability	use "ability" or "being able"
	Privacy is...\feeling	discuss privacy as a feeling or emotion
	Privacy is...\guarantee	use "guarantee"
	Privacy is...\idea	use "idea"
	Privacy is...\privacy is privacy	cannot define privacy, privacy is what it is
	Privacy is...\right	use "right"
	Privacy is...\state	use "state"
repercussions		*what happens if your privacy is not kept?*
	repercussions\benefit someone else	your information may benefit someone else
	repercussions\safety	your safety will be impaired
Free and Safe / Comfort		
	Free and Safe / Comfort\no pressure / fear	feeling relaxed without pressure or fear of stuff getting out, at ease
	Free and Safe / Comfort\disruption/bothered	not being interrupted or bothered by anyone or anything else
	Free and Safe / Comfort\freedom	doing what you want to when you want to
	Free and Safe / Comfort\safety	being safe and secure
	Free and Safe / Comfort\peace of mind	being able to do things without fear
Space		
	anonymous	being one of a number, not identifyable
	personal space	having some space to yourself
	place	having privacy in a place, or having a place to yourself, like your home
	seclusion	being alone
Other		
	body	keeping your body private, or private parts
	privacy varies	privacy means different things to different people, or no agreement on privacy
	helpless	nothing you can do to control privacy
	Identity	use "identity"
	independent	remaining independent or autonomous
	maintain	use "maintain"
	personal	use "personal"
	universal	everyone has privacy, everyone needs privacy, belongs to everyone
Involves… (this is the list of items that some respondents have)		*what does that list involve?*
	Involves...\others	Only others' things

	Involves...\yours and others	Both yours and others' things
	Involves...\yours	Only your things
not sure		

Data Table – Participant Count

	Total	Young Adults	Older Adults	Males	Females
Locus of Control	**49**	**24**	**25**	**22**	**27**
Locus of Control\both (both parties have a say)	4	2	2	2	2
Locus of Control \external (they are in control)	12	5	7	3	9
Locus of Control\internal (you are in control)	33	17	16	17	16
Information/Disclosure	**51**	**26**	**25**	**21**	**30**
Information/Disclosure\Who's information?	50	26	24	20	30
Information/Disclosure\Who's information?\both	1	0	1	0	1
Information/Disclosure\Who's information?\theirs	5	4	1	1	4
Information/Disclosure\Who's information?\yours	44	22	22	19	25
Information	34	18	16	16	18
Information/Disclosure\disclosure / sharing	18	11	7	5	13
Information/Disclosure\access	2	2	0	2	0
Information/Disclosure\information	25	13	12	13	12
Information/Disclosure\ownership	1	1	0	1	0
Secret/hidden	**11**	**6**	**5**	**4**	**7**
Secret/hidden\secret	5	3	2	2	3
Secret/hidden\confidentiality	6	3	3	2	4
Secret/hidden\hidden	1	1	0	0	1
Others	**46**	**23**	**23**	**19**	**27**
Others\Includes Others?	36	17	19	13	23
Others\Includes Others?\includes others	3	2	1	1	2
Others\Includes Others?\includes certain others	18	10	8	7	11
Others\Includes Others?\does not include others	15	5	10	5	10
Others\Why?	37	20	17	17	20
Others\Why?\no right/need to know/none of your business	8	3	5	3	5
Others\Why?\trust	2	1	1	1	1
Others\Why?\keep / protect	22	12	10	10	12
Others\Why?\boundary	1	1	0	1	0
Others\Why?\consent	8	5	3	4	4
Others\Why?\from the public	1	1	0	1	0
Others\Why?\control	5	3	2	3	2

Choice	**16**	**11**	**5**	**7**	**9**
Choice\decision	8	7	1	3	5
Choice\preference	10	6	4	4	6
Respect/violation	**9**	**4**	**5**	**2**	**7**
Respect/violation\violation	7	2	5	2	5
Respect/violation\respect	4	4	0	0	4
Privacy is...	**23**	**14**	**9**	**11**	**12**
Privacy is...\ability	7	6	1	5	2
Privacy is...\feeling	1	1	0	1	0
Privacy is...\guarantee	1	1	0	0	1
Privacy is...\idea	1	1	0	0	1
Privacy is...\privacy is privacy	3	0	3	1	2
Privacy is...\right	11	6	5	4	7
Privacy is...\state	1	1	0	1	0
repurcussions	**2**	**1**	**1**	**0**	**2**
repurcussions\benefit someone else	1	0	1	0	1
repurcussions\safety	1	1	0	0	1
Free and Safe / Comfort	**7**	**3**	**4**	**5**	**2**
Free and Safe / Comfort\no pressure / fear	2	0	2	1	1
Free and Safe / Comfort\comfort	1	0	1	0	1
Free and Safe / Comfort\freedom	2	2	0	2	0
Free and Safe / Comfort\safety	2	1	1	1	1
Free and Safe / Comfort\peace of mind	1	0	1	1	0
space related	**12**	**3**	**9**	**6**	**6**
anonymous	1	1	0	1	0
personal space	2	0	2	0	2
place	3	1	2	1	2
seclusion	6	1	5	4	2
anonymous	1	1	0	1	0
body	1	1	0	0	1
privacy varies	2	2	0	1	1
helpless	2	0	2	0	2
independent	1	0	1	1	0
personal	15	8	7	5	10
personal space	2	0	2	0	2
place	3	1	2	1	2
seclusion	6	1	5	4	2
universal	2	2	0	0	2
Involves...	**24**	**10**	**14**	**7**	**17**
Involves...\others	2	1	1	0	2
Involves...\yours and others	8	2	6	2	6
Involves...\yours	16	8	8	6	10
not sure	6	1	5	3	3
	766	397	369	317	449

Data Table – Percentages

	Total	Young Adults	Older Adults	Males	Females
Locus of Control	**80%**	**92%**	**71%**	**79%**	**82%**
Locus of Control\both (both parties have a say)	7%	8%	6%	7%	6%
Locus of Control \external (they are in control)	20%	19%	20%	11%	27%
Locus of Control\internal (you are in control)	54%	65%	46%	61%	48%
Information/Disclosure	**84%**	**100%**	**71%**	**75%**	**91%**
Information/Disclosure\Who's information?	82%	100%	69%	71%	91%
Information/Disclosure\Who's information?\both	2%	0%	3%	0%	3%
Information/Disclosure\Who's information?\theirs	8%	15%	3%	4%	12%
Information/Disclosure\Who's information?\yours	72%	85%	63%	68%	76%
Information	56%	69%	46%	57%	55%
Information/Disclosure\disclosure / sharing	30%	42%	20%	18%	39%
Information/Disclosure\access	3%	8%	0%	7%	0%
Information/Disclosure\information	41%	50%	34%	46%	36%
Information/Disclosure\ownership	2%	4%	0%	4%	0%
Secret/hidden	**18%**	**23%**	**14%**	**14%**	**21%**
Secret/hidden\secret	8%	12%	6%	7%	9%
Secret/hidden\confidentiality	10%	12%	9%	7%	12%
Secret/hidden\hidden	2%	4%	0%	0%	3%
Others	**75%**	**88%**	**66%**	**68%**	**82%**
Others\Includes Others?	59%	65%	54%	46%	70%
Others\Includes Others?\includes others	5%	8%	3%	4%	6%
Others\Includes Others?\includes certain others	30%	38%	23%	25%	33%
Others\Includes Others?\does not include others	25%	19%	29%	18%	30%
Others\Why?	61%	77%	49%	61%	61%
Others\Why?\no right/need to know/none of your business	13%	12%	14%	11%	15%
Others\Why?\trust	3%	4%	3%	4%	3%
Others\Why?\keep / protect	36%	46%	29%	36%	36%
Others\Why?\boundary	2%	4%	0%	4%	0%
Others\Why?\consent	13%	19%	9%	14%	12%
Others\Why?\from the public	2%	4%	0%	4%	0%
Others\Why?\control	8%	12%	6%	11%	6%
Choice	**26%**	**42%**	**14%**	**25%**	**27%**

Choice\decision	13%	27%	3%	11%	15%
Choice\preference	16%	23%	11%	14%	18%
Respect/violation	**15%**	**15%**	**14%**	**7%**	**21%**
Respect/violation\violation	11%	8%	14%	7%	15%
Respect/violation\respect	7%	15%	0%	0%	12%
Privacy is...	**38%**	**54%**	**26%**	**39%**	**36%**
Privacy is...\ability	11%	23%	3%	18%	6%
Privacy is...\feeling	2%	4%	0%	4%	0%
Privacy is...\guarantee	2%	4%	0%	0%	3%
Privacy is...\idea	2%	4%	0%	0%	3%
Privacy is...\privacy is privacy	5%	0%	9%	4%	6%
Privacy is...\right	18%	23%	14%	14%	21%
Privacy is...\state	2%	4%	0%	4%	0%
repurcussions	**3%**	**4%**	**3%**	**0%**	**6%**
repurcussions\benefit someone else	2%	0%	3%	0%	3%
repurcussions\safety	2%	4%	0%	0%	3%
Free and Safe / Comfort	**11%**	**12%**	**11%**	**18%**	**6%**
Free and Safe / Comfort\no pressure / fear	3%	0%	6%	4%	3%
Free and Safe / Comfort\comfort	2%	0%	3%	0%	3%
Free and Safe / Comfort\freedom	3%	8%	0%	7%	0%
Free and Safe / Comfort\safety	3%	4%	3%	4%	3%
Free and Safe / Comfort\peace of mind	2%	0%	3%	4%	0%
space related	**20%**	**12%**	**26%**	**21%**	**18%**
anonymous	2%	4%	0%	4%	0%
personal space	3%	0%	6%	0%	6%
place	5%	4%	6%	4%	6%
seclusion	10%	4%	14%	14%	6%
anonymous	2%	4%	0%	4%	0%
body	2%	4%	0%	0%	3%
privacy varies	3%	8%	0%	4%	3%
helpless	3%	0%	6%	0%	6%
independent	2%	0%	3%	4%	0%
personal	25%	31%	20%	18%	30%
personal space	3%	0%	6%	0%	6%
place	5%	4%	6%	4%	6%
seclusion	10%	4%	14%	14%	6%
universal	3%	8%	0%	0%	6%
Involves...	**39%**	**38%**	**40%**	**25%**	**52%**
Involves...\others	3%	4%	3%	0%	6%
Involves...\yours and others	13%	8%	17%	7%	18%
Involves...\yours	26%	31%	23%	21%	30%
not sure	10%	4%	14%	11%	9%

Data Table – Numbers by Privacy Attitudes

	Total	Unconcerned	Pragmatist	Fundamentalist
N=	61	7	47	7
Locus of Control	**49**	**5**	**39**	**5**
Locus of Control\both (both parties have a say)	4	1	2	1
Locus of Control \external (they are in control)	12	2	8	2
Locus of Control\internal (you are in control)	33	2	29	2
Information/Disclosure	**51**	**6**	**41**	**4**
Information/Disclosure\Who's information?	50	6	41	3
Information/Disclosure\Who's information?\both	1	0	1	0
Information/Disclosure\Who's information?\theirs	5	0	5	0
Information/Disclosure\Who's information?\yours	44	6	35	3
Information	**34**	**4**	**27**	**3**
Information/Disclosure\disclosure / sharing	18	2	14	2
Information/Disclosure\access	2	1	1	0
Information/Disclosure\information	25	3	20	2
Information/Disclosure\ownership	1	0	1	0
Secret/hidden	**11**	**1**	**9**	**1**
Secret/hidden\secret	5	1	3	1
Secret/hidden\confidentiality	6	0	6	0
Secret/hidden\hidden	1	0	1	0
Others	**46**	**5**	**38**	**3**
Others\Includes Others?	36	4	31	1
Others\Includes Others?\includes others	3	1	2	0
Others\Includes Others?\includes certain others	18	2	16	0
Others\Includes Others?\does not include others	15	1	13	1
Others\Why?	**37**	**4**	**30**	**3**
Others\Why?\no right/need to know/none of your business	8	1	7	0
Others\Why?\trust	2	1	0	1
Others\Why?\keep / protect	22	2	20	0
Others\Why?\boundary	1	0	1	0
Others\Why?\consent	8	1	6	1
Others\Why?\from the public	1	0	1	0
Others\Why?\control	5	0	4	1
Choice	**16**	**1**	**14**	**1**
Choice\decision	8	0	8	0

Choice\preference	10	1	8	1
Respect/violation	**9**	**0**	**6**	**3**
Respect/violation\violation	7	0	4	3
Respect/violation\respect	4	0	4	0
Privacy is...	**23**	**0**	**21**	**2**
Privacy is...\ability	7	0	6	1
Privacy is...\feeling	1	0	1	0
Privacy is...\guarantee	1	0	1	0
Privacy is...\idea	1	0	1	0
Privacy is...\privacy is privacy	3	0	3	0
Privacy is...\right	11	0	10	1
Privacy is...\state	1	0	1	0
repurcussions	**2**	**1**	**0**	**1**
repurcussions\benefit someone else	1	1	0	0
repurcussions\safety	1	0	0	1
Free and Safe / Comfort	7	1	4	2
Free and Safe / Comfort\no pressure / fear	2	1	0	1
Free and Safe / Comfort\comfort	1	1	0	0
Free and Safe / Comfort\freedom	2	0	2	0
Free and Safe / Comfort\safety	2	0	1	1
Free and Safe / Comfort\peace of mind	1	0	1	0
space related	**12**	**2**	**7**	**3**
anonymous	1	0	1	0
personal space	2	1	1	0
place	3	1	2	0
seclusion	6	0	3	3
anonymous	1	0	1	0
body	1	0	1	0
privacy varies	2	0	2	0
helpless	2	0	2	0
independent	1	0	1	0
personal	15	1	13	1
personal space	2	1	1	0
place	3	1	2	0
seclusion	6	0	3	3
universal	2	0	2	0
Involves...	**24**	**3**	**19**	**2**
Involves...\others	2	0	2	0
Involves...\yours and others	8	0	7	1
Involves...\yours	16	3	12	1
not sure	**6**	**0**	**5**	**1**

Data Table – Percentages by Privacy Attitudes

	Total	Unconcerned	Pragmatist	Fundamentalist
N=		7	47	7
Locus of Control	**80%**	**71%**	**83%**	**71%**
Locus of Control\both (both parties have a say)	7%	14%	4%	14%
Locus of Control \external (they are in control)	20%	29%	17%	29%
Locus of Control\internal (you are in control)	54%	29%	62%	29%
Information/Disclosure	**84%**	**86%**	**87%**	**57%**
Information/Disclosure\Who's information?	82%	86%	87%	43%
Information/Disclosure\Who's information?\both	2%	0%	2%	0%
Information/Disclosure\Who's information?\theirs	8%	0%	11%	0%
Information/Disclosure\Who's information?\yours	72%	86%	74%	43%
Information	**56%**	**57%**	**57%**	**43%**
Information/Disclosure\disclosure / sharing	30%	29%	30%	29%
Information/Disclosure\access	3%	14%	2%	0%
Information/Disclosure\information	41%	43%	43%	29%
Information/Disclosure\ownership	2%	0%	2%	0%
Secret/hidden	**18%**	**14%**	**19%**	**14%**
Secret/hidden\secret	8%	14%	6%	14%
Secret/hidden\confidentiality	10%	0%	13%	0%
Secret/hidden\hidden	2%	0%	2%	0%
Others	**75%**	**71%**	**81%**	**43%**
Others\Includes Others?	59%	57%	66%	14%
Others\Includes Others?\includes others	5%	14%	4%	0%
Others\Includes Others?\includes certain others	30%	29%	34%	0%
Others\Includes Others?\does not include others	25%	14%	28%	14%
Others\Why?	**61%**	**57%**	**64%**	**43%**
Others\Why?\no right/need to know/none of your business	13%	14%	15%	0%
Others\Why?\trust	3%	14%	0%	14%
Others\Why?\keep / protect	36%	29%	43%	0%
Others\Why?\boundary	2%	0%	2%	0%
Others\Why?\consent	13%	14%	13%	14%
Others\Why?\from the public	2%	0%	2%	0%
Others\Why?\control	8%	0%	9%	14%
Choice	**26%**	**14%**	**30%**	**14%**
Choice\decision	13%	0%	17%	0%

Choice\preference	16%	14%	17%	14%
Respect/violation	**15%**	**0%**	**13%**	**43%**
Respect/violation\violation	11%	0%	9%	43%
Respect/violation\respect	7%	0%	9%	0%
Privacy is...	**38%**	**0%**	**45%**	**29%**
Privacy is...\ability	11%	0%	13%	14%
Privacy is...\feeling	2%	0%	2%	0%
Privacy is...\guarantee	2%	0%	2%	0%
Privacy is...\idea	2%	0%	2%	0%
Privacy is...\privacy is privacy	5%	0%	6%	0%
Privacy is...\right	18%	0%	21%	14%
Privacy is...\state	2%	0%	2%	0%
repurcussions	**3%**	**14%**	**0%**	**14%**
repurcussions\benefit someone else	2%	14%	0%	0%
repurcussions\safety	2%	0%	0%	14%
Free and Safe / Comfort	11%	14%	9%	29%
Free and Safe / Comfort\no pressure / fear	3%	14%	0%	14%
Free and Safe / Comfort\comfort	2%	14%	0%	0%
Free and Safe / Comfort\freedom	3%	0%	4%	0%
Free and Safe / Comfort\safety	3%	0%	2%	14%
Free and Safe / Comfort\peace of mind	2%	0%	2%	0%
space related		**29%**	**15%**	**43%**
anonymous		0%	2%	0%
personal space		14%	2%	0%
place		14%	4%	0%
seclusion		0%	6%	43%
anonymous	2%	0%	2%	0%
body	2%	0%	2%	0%
privacy varies	3%	0%	4%	0%
helpless	3%	0%	4%	0%
independent	2%	0%	2%	0%
personal	25%	14%	28%	14%
personal space	3%	14%	2%	0%
place	5%	14%	4%	0%
seclusion	10%	0%	6%	43%
universal	3%	0%	4%	0%
Involves...	**39%**	**43%**	**40%**	**29%**
Involves...\others	3%	0%	4%	0%
Involves...\yours and others	13%	0%	15%	14%
Involves...\yours	26%	43%	26%	14%
not sure	**10%**	**0%**	**11%**	**14%**

Appendix E - Submissions and Writing

Work In Progress Submission to CHI (submitted 1/08)

Privacy and Technology: Folk Definitions and Perspectives

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Abstract
In this paper we present preliminary results from a study of individual differences in privacy beliefs and relate folk definitions of privacy to extant privacy theory. Focus groups were conducted with younger and older adult participants who shared their individual definitions of privacy and engaged in a discussion of privacy across six scenarios. Taken together, Westin's and Altman's theories of privacy accounted for both younger and older adults' ideas about privacy; however, neither theory successfully accounted for findings across all age and gender groups. Whereas males tended to think of privacy in terms of personal needs and convenience, females focused more on privacy in terms of others, respecting privacy rights, and safety. Older adults tended to be more concerned with privacy of space than information privacy. Initial results suggest that designing for commonalities in privacy perceptions among group members is feasible.

Keywords
Privacy, focus group methodology, age differences, gender differences.

ACM Classification Keywords
K.4.1. [Computers and Society]: Public Policy Issues; J.4 Social and Behavioral Sciences

Introduction

As the manner in which we interact with our world becomes more virtual we are being asked to disclose information about our lives in entirely new ways. To take advantage of many websites, users must create online identities and are required to divulge pieces of information that some consider private (social security numbers, bank account numbers, mother's maiden name, etc.). Websites such as Facebook and MySpace have shed new light on fundamental questions about representations of self, both on and off-line. What information should be publically available and which information is considered private have been the topic of both mass media (e.g., [4]) and scholarly attention (e.g., [9]).

Given the increase in requests for disclosures online, designing for privacy is important - some say critical - in helping users feel comfortable, safe, and private while interacting with technologies. Understanding the characteristics of systems that users perceive to influence their privacy is a critical first step for designers. But how is this done? How does one design something to be *private*? Some designers have approached the privacy problem by adding privacy/sharing features that allow users to specify what information they wish to share and with whom they wish to share it. Other technologies, for example banking or health technologies, apply a blanket privacy policy. But what are the best ways to help users understand the privacy decisions they are making?

To begin to design technologies that users perceive as privacy protective, one must understand what users' conceptual model of privacy is, and where these may diverge from conceptualizations of privacy offered in the literature. Oft cited definitions of privacy stem from the work of Alan Westin [15] and Irwin Altman [1] from the 1960s and 1970s [12]. Westin's theory describes privacy as the control over how information about a person is handled and communicated to others [12]. Altman added that privacy includes limiting social interaction and included regulating personal space and territory [1].

Though researchers within HCI often mention the work of Westin and Altman, many focus on narrow topics such as online self-disclosure in a particular domain like e-commerce [2], social networking [5], information sharing [14] or location sharing preferences [11]. While these studies do address aspects of privacy in a specific realm, what they leave to be desired is a contribution to the broader understanding of perceptions of privacy across contexts.

Researchers cite two reasons for the avoidance of studying privacy as a whole. One reason is the lack of an agreed upon definition of privacy [13]. The other is that problems arise in attempting to draw general conclusions because "privacy means different things to different people" [9]. If we accept this assertion, it is surprising, then, that few attempts have been made to study individual differences, as understanding privacy at this level might provide the biggest insight into how to successfully design for privacy.

A review of the literature on privacy suggests that there are certain components that are critical to perceptions of privacy. However, at the level of the individual, privacy perceptions may be more idiosyncratic [6]. Our goals in the present study are to understand the privacy views of individuals – young and old, male and

female – to inform the design process at the individual level. We conducted a focus group study to investigate folk beliefs about privacy and to determine whether common issues arise in privacy perspectives across contexts as well as across individuals. This methodology provides a rich corpus of data that will enable us to determine how people think about privacy in the context of everyday activities, including those related to technology, and to link these views to extant theories of privacy.

Method

Participants

Participants were 26 students at Georgia Institute of Technology and 6 older adult females (data collection with older adults is ongoing; we intend to interview an additional 20 older adult participants). Students were recruited using the psychology participant pool at Georgia Tech and by recruitment emails directed at undergraduate students. The older adults were drawn from a participant pool of adults aged 65-80. Four younger adult focus group sessions and one older adult session were conducted with 6-8 participants in each session. To promote disclosure [10], encourage discussion, and enable analysis of differences across sessions, groups were kept homogenous with respect to gender and age. Of the 26 younger adult participants (aged 18 to 28), 13 were male and 13 were female. Participants were compensated with course credit or with $10 an hour for 3 hours of their time.

Materials

Questionnaires. Participants were asked to rank 8 privacy beliefs on a Likert scale to assess their base privacy attitudes and allow for categorization into one of three Westin classifications of privacy concern [6, 8]. These privacy attitudes included overall privacy beliefs (e.g., "Existing laws and organizational practices provide a reasonable level of protection for consumer privacy today") and online privacy beliefs (e.g., "I am concerned about online identity theft") based on Jensen et al.'s adaptation of Westin's segmentations [7]. Participants also completed a questionnaire to determine technology usage (history, breadth of technology use, and time spent using such technologies), as well as demographic and health questionnaires.

Focus Group Script. The focus group script was designed to elicit participants' individual definitions of privacy and what privacy means to them, as well as their opinions about privacy in the context of six scenarios with semi-structured follow-up probes.

Procedure

Participants provided their privacy attitudes at least 24 hours prior to the focus group session to minimize bias on the content of the discussion. The rest of the questionnaires (e.g., demographics forms) were completed during the course of the session.

Privacy Definitions. The first task given to participants was to write down their individual definition of privacy and their idea of what privacy means to them. After working individually and recording these initial responses, participants collectively brainstormed about privacy definitions, explored ideas only some group members had mentioned in their definitions, and discussed ideas about privacy that were not shared by all group members. Participants were encouraged to share personal stories with the group as they discussed privacy definitions and were asked to discuss the last

Example Scenarios	
Surveillance	"Your city is trying to crack down on traffic violations by installing a traffic camera on every stoplight."
Location Tracking	"You are using a cell phone with a tracking device, and you find out that anyone in the world can determine your exact location."
Photo Sharing	"You have a lifetime of photos you are thinking of storing on a website."
Self-Disclosure & Relationship Building	"You are having a conversation with your friends at home."
Identity Theft	"You are using your credit card in a restaurant and the waiter takes the card into the other room for five minutes."
Health Disclosure	"You have symptoms of an illness that you are discussing with a nurse."

time privacy had come to their mind prior to the present study.

Privacy Scenarios. The remainder of the focus group session was devoted to discussion of six scenarios. Scenarios were chosen to provide participants with a wide range of topics for discussion, including topics commonly observed in discussions of privacy (e.g., identity theft, surveillance, health disclosure). The scenarios broadly represented the information-based and boundary-based privacy theories of Westin and Altman [12].

Each scenario description was followed up by multiple probes aimed to delve into the reasons for privacy beliefs and reported behaviors. For example, after discussing the scenario related to storing a lifetime of photos, follow-up questions assessed whether different views might exist when photos were stored using another medium (e.g., a scrapbook or an online photo album), in a smaller set, such that the photo owner could choose who sees the set of photos, or when the set included sensitive pictures. Many probes were also designed to elicit responses related to the four dimensions affecting awareness and acceptance of monitoring within cooperative workplaces offered by Bellotti and Sellen [3]. Specifically, follow-up questions addressed capture (the nature of the information), construction (how the information is stored), accessibility (who has access to the information), and purpose (why people want the data). Additional probes were inspired by the design criteria proposed by Jensen, Tullio, Potts & Mynatt [7] namely notice/awareness, choice/consent, integrity/security, and enforcement/redress.

Results

Privacy Attitudes

The majority of the participants (82%) were categorized as privacy pragmatists, who "have strong feelings about privacy" and want to protect themselves from privacy invasions, yet are often willing to allow people to have access to their information at some times [6, 8]. While the percentage of pragmatists is much higher (82% in our sample vs. 64% in the Harris Poll [6]) than expected, this may be due to our initial sample being skewed heavily by younger adults. In fact, 3 of the 5 privacy fundamentalists (those who feel they have lost their privacy altogether) in our sample were older adults.

Privacy Definitions

A bottom-up coding scheme was applied to the individually written privacy definitions. The fundamental ideas that participants mentioned most often were that privacy involves *other people* (59%) and *information* of one form or another (52%). Supporting those fundamental beliefs, younger adults brought up ideas of *control* (e.g., controlling a piece of information, 26%), *decisions* (about what to do with the information, 30%), *disclosure* (whether to share the information, 41%), and *non-disclosure* (whether to keep the information to yourself, 37%). Issues about consent and confidentiality were also raised in discussion about whether to disclose something and when to disclose. Younger adults also talked about the *right* to privacy (22%), and the mutual *respect* (15%) that one should be given in regard to *personal* information (11%). Examples of all of the privacy states developed by Westin (reserve, solitude, intimacy, and anonymity) were mentioned, but younger adults tended to define

P5 – young adult female: "I believe that privacy is keeping information that [one] finds to be personal to yourself. I think it is important that information I find personal can only be divulged by me, in good conscious state, to people that I trust to keep it 'secret'."

P17 – young adult male: "Information and experiences from my life that only I, and those people that I deem appropriate, should have access to… specifically, thoughts, emotions, and actions that aren't necessarily anyone else's business but my own."

P29 – older adult female: "Privacy, to me, means keeping confidential the personal information about myself, my family, and my closest friends who have confided in me. In particular, [privacy to me is] about health, interpersonal relationships, and financial status."

Example privacy definitions show the prevalence of *other people*, *information*, and *control*.

privacy mostly in terms of what Westin called reserve, or the desire to limit disclosures to others [12].

Gender Differences. Although overall both males and females discussed privacy in terms of control, there were some gender differences in factors motivating the desire for control. Females were more likely to talk about privacy involving others (71%) than males (46%). In addition, females brought up topics that none of the males in the study mentioned, such as respect (29%), seclusion (21%), and the 'personal' nature of privacy (21%), as well as mentioning safety (14%) and having to protect one's privacy (14%).

On the other hand, males tended to raise issues of personal needs in privacy such as convenience and being bothered by granting access to certain information, mentioning privacy as having freedom (8%), being anonymous (8%), comfort (8%), or not being seen or heard (8%).

Age Differences. Although still in the data collection phase, we have already begun to notice differences in the privacy definitions of older adults based on a qualitative analysis of the first focus group of 6 older adult females. The biggest difference is that older adults tended to define privacy in terms of space instead of information. For example, having one's own space and invasions into one's home were topics discussed. In addition, when older adults did define privacy as information, they tended to have a different idea of what this information was. In their privacy definitions, older adults mentioned private information as something official that they are given: a legal document, health information, their social security number, or a secret that a friend confides in them; whereas younger adults had a much broader conceptualization of private information.

Conclusions and Future Work

Initial results suggest that males and females may think about privacy in different ways, and there may be differences between older and younger adults. While analysis is not complete, the data analyzed thus far indicate that Westin's theory of information privacy better accounts for younger adults' ideas about privacy whereas Altman's theory of spatial privacy better accounts for older adults' ideas about privacy.

The differences in the concept of privacy across age group and gender are important both in terms of refining privacy theory and for design. For example, knowing that younger adults think of privacy in terms of information should motivate designers to provide options to safeguard such personal information. However, this feature may not be as relevant for an older adult population, unless the information is 'official,' such as health records or legal documents.

As many researchers have claimed, privacy may be different for everyone. The data we have presented begin to elucidate the individual differences in privacy definitions. Once analysis is complete, we will be able to draw connections between individual differences and specific scenarios, providing insight into how privacy beliefs vary person to person, situation to situation, and group to group.

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Appendix E – Submissions and Writing

Signpost Article (submitted 3/08)

Older Adult's Privacy in a Monitored Home

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Introduction

There was a time when homes that watched us and helped us care for ourselves were purely the stuff of science fiction. However, today, technology has the potential to support older adults in the home for longer than ever before. Specifically, home monitoring technologies are a means to compensate for limitations, aid in recall, and promote communication between family members. The capabilities of these homes come right at the time when many of us are being faced with difficult decisions about caring for aging loved ones. Older adults and those who care about them cannot wait until physical and mental decline begins to impinge on older adults' ability to care for themselves, but instead have to consider ways of compensating for these declines so they do not affect lifestyle any more than necessary.

One way lifestyle may be preserved is by allowing an older adult to age in place. *Aging in place* is the idea that older adults prefer to—and are better off in the long run when they—stay in their own home rather than moving to an assisted living facility. To age in place, older adults must be able to take care of themselves including performing *Activities of Daily Living* (ADL), such as eating, bathing, and dressing, and *Instrumental Activities of Daily Living*, such as preparing healthy meals, dealing adequately with medications, and doing laundry. These activities are essential for remaining independent and autonomous (Lawton & Brody, 1969; Clark, Czaja, & Weber, 1990). Monitoring the home environment is one way to support older adults in performing ADL and IADLs. In addition to preserving lifestyle, aging in place may be more cost effective; enrolling a loved one in full-time residential care is often too expensive for many families (Mutschler 1997), and the burden of having to be available for an aging relative may seem overwhelming.

Due to its benefits, aging in place is becoming the focus of many current technologies (Mynatt, Melenhorst, Fisk, & Rogers, 2004). Video and other types of monitoring systems are being used in the home to monitor older adults. For an older adult, living alone a home monitoring device acts as a means of assurance to family members, as well as an alert system in case of emergency. Integrating home monitoring into an adaptive smart home environment has the potential to support residents in healthcare management, health and wellbeing, in learning new skills, and in social communication.

What is a Smart Home?

A smart home is a home equipped with technologies that enable the house to be 'aware' of the activities occurring and therefore adapt to and support its residents. Through the use of technologies such as cameras, weight and motion sensors, and heat-tracking devices, the house collects information about the residents' habits and behavioral patterns. Compiling this

information can allow the home to become an adaptive environment, supporting daily activities such as caring for family members, cooking, and taking medications.

The Aware Home Research Initiative at the Georgia Institute of Technology is examining technologies in the home that will enhance residents' lives and allow them to maintain independence as they age (http://awarehome.imtc.gatech.edu/). Several ongoing projects span topics such as chronic care management, future home tools, and entertainment. One project that may be particularly useful to older adults is one involving monitoring systems that allow a remote loved one or caregiver to check up on the older adult. However, when considering such monitoring technologies older adults often cite concerns about invasion of privacy as a potential barrier for adoption (Melenhorst, Fisk, Mynatt, & Rogers, 2004). With all of the ways home monitoring can help older adults remain autonomous and independent, the benefits of the technologies are meaningless if residents choose not to use them. Therefore, importance has to be placed on designing home-monitoring technologies with privacy concerns in mind; sensitivities to such concerns are required with these types of systems.

Privacy Perspectives

To design home-monitoring systems that are sensitive to older adults' privacy concerns, one must know what those concerns *are*. More fundamentally, designing for privacy takes an understanding of how older adults conceptualize privacy, and where concerns fit into how they think about privacy. Initial results from a focus group study provide insight into older adults' (65-75 year olds) privacy perspectives. When asked to write down their privacy definitions, or what privacy means to them, older adults tended to define privacy in terms of space rather than information. For example, older adults gave examples of home invasions and intruders taking their belongings, as well as the importance of personal physical and emotional space. In addition, when older adults did define privacy as information, they focused on more formal types of information, such as a legal or financial document, health information, their social security number, or a secret that a friend confides in them (Kwasny, Caine, Rogers, & Fisk, 2008).

Privacy in a Smart Home

While one's general definition of privacy plays a role, many other factors also come into play when older adults determine comfort level with home-monitoring. For example, it is important to consider the setting where monitoring will occur, in addition to considering they types of information that will be gathered. A smart home laboratory can provide a better contextual setting for studying such home technologies (Blanson Henkemans et al., 2007). As one would imagine, privacy and intrusion in this context touches on both spatial and information privacy. The nature of home monitoring is spatial – it takes place in different rooms of the residents' home. Activities that commonly occur in the kitchen and those that take place in the bedroom tend to be of different kinds, requiring different sensitivities. The locations of the home monitoring device, as well as one's location relative to the device, are important factors in determining privacy concerns (Caine, Fisk & Rogers, 2007).

In addition to spatial considerations (where the camera is located), older adult privacy concerns stem from informational considerations. The type of capture used in the system also mitigates privacy concerns (Caine et al. 2007). In home monitoring, the type of image used can provide detailed information about location, activity, and identity. Take, for example, three types of image-capture systems: a video camera, a point-light device, and a blob tracker. A video image,

such as those seen on television, conveys a lot of information along three dimensions, showing exactly the subject's location, activity, and identity. A point-light image, or an image made up of white dots that indicate the location of joints on the human body, offers much less information about identity, but still provides some location and activity information. A third image, that of a blob tracking or heat detecting type of system, offers little to no information about activity or identity, but still provides location.

Recent work on the topic of capture has shown that older adults have more concerns with the richer video images, but they also recognized that the fidelity of the image also provides more benefit relative to images of low fidelity (Caine, Fisk & Rogers, 2006). However, these results are also influenced by the level of physical and mental functioning of the person using the system. Older adults reported fewer privacy concerns when discussing a low-functioning individual than when the individual was high-functioning suggesting that the need for a monitoring system may be intertwined with the perception of privacy concern. Specifically, when the level of mental functioning of the individual was low, the perception of older adults was that they would have lower levels of privacy concern than if the individual in the scenario were high in mental or physical functioning, regardless of device type.

One possible explanation for this finding is that a person with lower mental functioning may have more to gain from the use of home monitoring technologies (such as a video camera in the home collecting rich information about location, activity, and identity), and therefore may have fewer privacy concerns about this technology. The idea here is that 'usefulness' of the device may also be taken into account when making decisions about types of home monitoring systems. Older adults may be willing to overlook privacy concerns about a specific technology if they recognize the benefits of that technology as greater than those technologies that, under other circumstances, may tend to be associated with more privacy concern (Caine, 2006).

Conclusion

Privacy is a concern about homes that monitor their residents (Caine, Fisk & Rogers, 2006), but that's not all there is to the story. Many times the decisions about home-monitoring depends on complex inter-related factors, such as level of mental and physical functioning, the type of device being used, and who is doing the home monitoring. Older adults recognize that the technologies about which they may have privacy concerns may also help them stay in their home longer than would otherwise be possible. Their desire to age in place, and to do so while maintaining a lifestyle that may be supported buy such smart home technologies, can be accomplished when implementations of home monitoring systems take privacy concerns into account.

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